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For The Average Enthusiast

VOL 8 1957 2/- AUGUST

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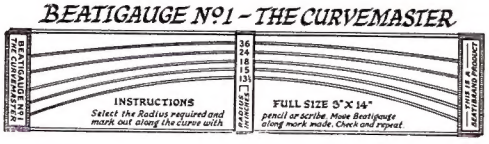
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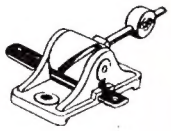

"TT" **2/5**
"OO" **2/5**

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„ „ distant **3/–**
„ post, home and distant **3/9**

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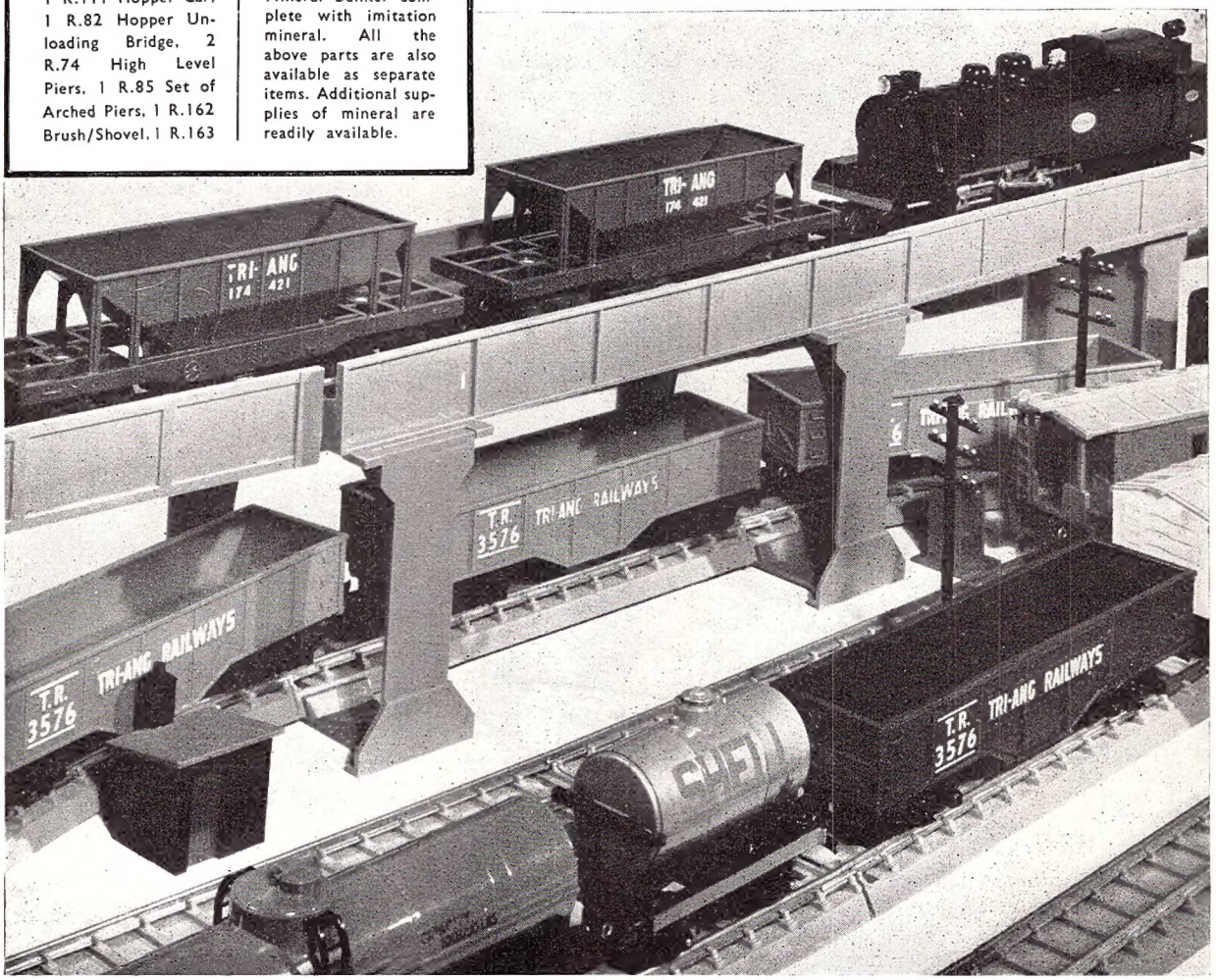

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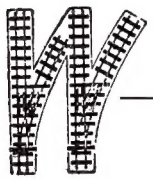

Competition Results

1st Prize £30

Douglas A. Ware
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Winning entry :

1	**A**	Ability to run all types of locos and rolling stock through pointwork.
5	**B**	The combined strength and realism of the products.
4	**C**	Flexibility of track with the ability to retain curves.
2	**D**	Ease of constructing layouts.
6	**E**	Extensive range to choose from.
3	**F**	Low cost of layout development.

2nd Prize £10

Sydney E. Parker
48 Garfield Avenue, Dorchester, Dorset

Photography Prize Track to the value of £10

John Thorpe
20 Lyndhurst Road, Barnehurst, Kent

The interest aroused as a result of our recent competition has been most gratifying. Entries from clubs, schools and the individual modeller indicate the enormous enthusiasm for Wrenn Track and Pointwork.

There was only one all-correct entry and a cheque for £30 has now been sent to Mr. Ware. We were interested to learn that Mr. Ware began railway modelling in 1951 and has always been a Wrenn enthusiast. His rolling stock is both extensive and varied, which prompted him to place Item A at the top of the list. In an interview he stressed the fact that the ease of construction was most important to him, particularly as time in operation was more important than time spent in construction. Cost too was an important factor and the flexibility of Wrenn Track with its ability to be curved and re-curved to suit all layouts was a contributing factor in this respect.

The opinion expressed by Mr. Ware was also shared by Mr. Parker of Dorset, who was judged the winner of the second prize. The winning photograph was submitted by Mr. Thorpe of Kent, whose entry showed remarkable thought both in construction and design.

Be sure that you are up to date with your layout development by asking your retailer to show you the latest details or write direct for a sample of Track and Literature, enclosing 1/- P.O. or 4d. in stamps for literature only.

The competition was judged by Mr. Maskelyne, well-known model railway expert.

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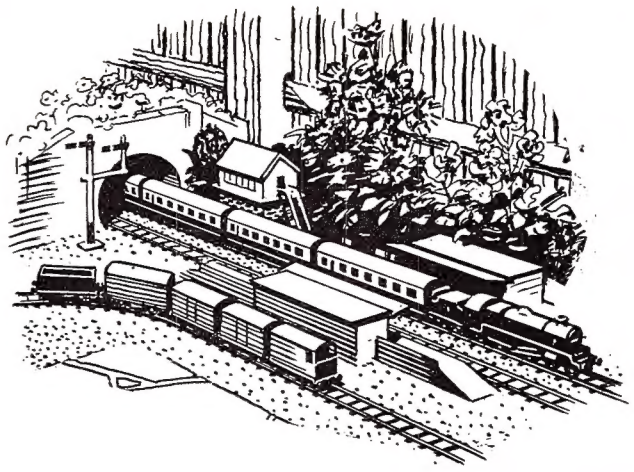

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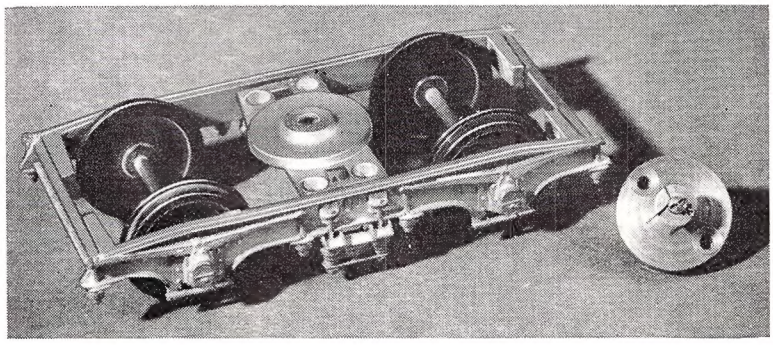

The centre bolster spring allows for inequalities in the track

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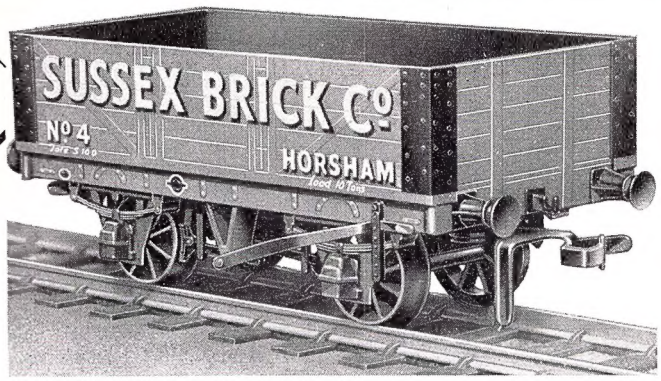

Should the hot, drowsy days of summer divert you from your major projects, why not keep things rolling by adding some kit-built stock to your system ? The Peco Wonderful Wagon kits are easy to assemble, and, being *absolutely* complete, you can slip the convenient-sized box into your pocket knowing that all you need is there ! Build Wonderful Wagons this summer !

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Straight Track, 18-inch lengths	3/9
Universal Turnouts, 15-inch radius, L.H. or R.H.	12/6
Universal Turnouts as above fitted with special Point Lever. Positive action. Complete and ready to lay. L.H. or R.H.	16/6
Fishplates, 3 doz. ... ... **2/5.** Track Spikes, per pkt.	7½d.
S & B "TT" Point Levers, each	2/5

Flat-bottom rail held by metal chairs to correctly spaced scale sleepers. Track is in 18in. straight lengths curvable to any radius.

NEW THIS MONTH

UNCOUPLER RAILS for use with Tri-ang "TT" rolling stock. 3¼in. long. Fits anywhere on track. ... Each 2/-

Our 1957 catalogue M87 gives full details of our 'OO' & 'TT' products. Price 1/6 post free

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Specializing in Small-scale Railway Modelling

The Lobby

FOR only £9 (£8 apiece if husband and wife travel together) the freedom of the L.M.R. is yours for a week ! This welcome extension of the popular runabout ticket was announced just a month ago, and we have no doubt that already several enthusiasts have taken full advantage of the biggest bargain in British transport today. It would indeed be interesting to know who has got the most mileage from one of these tickets—anyone who clocks less than 3,000 miles just isn't trying! We look forward to the extension of this service to all regions, and above all to the ultimate introduction of our private dream—a ticket covering the whole of British Railways.

Incidentally, experiments are now going on apace with automatic couplings for British Railways goods stock, in connection with the modernization plan, which envisages a wholesale speed-up of freight services. A description of a prototype coupler published recently in the *Railway Gazette* showed a most ingenious device with many interesting points. It will couple over a range of five inches in all directions and makes the vacuum brake connection at the same time. When coupled the total play is in the region of an eighth of an inch, yet uncoupling is readily achieved by a pull rod at the side. Having copied us so far (!) dare we suggest the addition of decoupling ramps so that the shunter of the future can sit comfortably in a cosy cabin directing operations with a push-button panel ?

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We hear from the Rev. Edward Beal, doyen of "OO" gauge, in a recent letter that he has been so impressed by "TT-3" that he is selling the "OO" gauge West Midland (interested parties please note) and starting again in the smaller size. What form the "TT-3" West Midland will take is still hidden in the womb of time, but we can be certain that the owner's fertile brain will soon be at it, devising new and original uses for commonplace objects in the new scale.

Holidaymakers in the west should make a note of two forthcoming exhibitions—the Weymouth M.E.S. show, which takes place from August 13 to 17 at Melcombe Regis Boys' School, and the Falmouth Model Railway Club's display, which takes place at the Women's Institute, Weber Street, for one week commencing August 26. Both societies possess excellent "OO" gauge layouts. Visitors to North Wales should visit Erias Park, Colwyn Bay, where an exhibition entitled "Marvels in Miniature" includes the Leeds club's "TT" gauge Conway-Deganwy railway and the model of the Penrhyn Quarry railway described last October.

Change of Publication Date

Next month and thereafter the RAILWAY MODELLER will be published on the 25th of the month preceding, except where this falls on a Sunday or a public holiday, when the date will be the first weekday afterwards. For readers' convenience we shall in future be giving the actual publication date for the next issue each month, and in addition the last day for receiving copy.

Managing - - - - S. C. PRITCHARD
Editor - - - - - - C. J. FREEZER
Art Editor - - - - - C. OATES
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COVER PICTURE

An attractive scene on Dr. G. Greenway's super gauge "1" garden railway. The spectator is his daughter, Louise Greenway (photo by E. C. Griffith).

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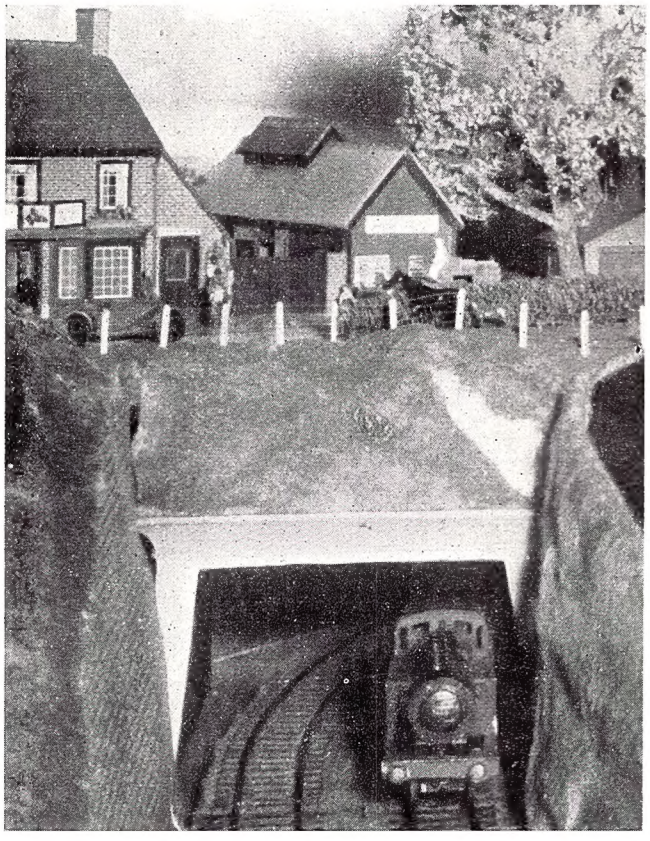
That it shall not without the written consent of the publishers be lent, resold, hired out, or otherwise disposed of by way of trade, except at the full retail price of 2/-, and that it shall not be lent, resold, hired out, or otherwise disposed of in mutilated condition, or in any unauthorized cover by way of trade, or affixed to as part of any publication or advertising, literary or pictorial matter whatsoever.

Railway of the Month

THE STRATHNESS RAILWAY

An Extensive " OO " Gauge System

by W. Mather



WHEN this layout was first planned two basic requirements had to be fulfilled: (1) it should be well within the scope of single-handed operation; (2) main-line trains of a reasonable (model) length could be operated without the effect of chasing their own tails or brake vans leaving station "A" just as the loco enters station " B."

The gauge (16.5mm.) was decided on only after considerable deliberation, the determining factors being: (1) availability of components; (2) in a " round-the-room " layout, end-on-views of the rolling stock are unusual.

Whether these factors have justified themselves in practice is now somewhat doubtful, since, to obtain the best effect, trackwork and general clearances have been reduced to a minimum. Consequently back-to-back measurements, particularly as regards locomotives, have become very critical.

The gradients (see plan) may appear easy by usual model practice, but were decided on by trial before the design was drawn out. The entire nature of the layout entails steady collar work in one direction with few opportunities of getting a " run at it."

The basic design is that old and discarded principle the spiral, but scenic work has been designed to cover this as far as possible. The drop in level from Strathness to Glenarvon is two inches, and from there to the end of the layout a further three. This may appear slight, but it was the maximum that could be obtained.

The Strathness Branch Railway must be regarded as no more than a free-lance effort. It is intended to represent the last section of a single-track railroad starting from Perth and passing through an imaginary district in central Scotland to serve an inland spa of the Gleneagles—Strathpeffer variety. Only the last twenty-four miles are modelled and, allowing for a model foreshortening of 1 to 12, this is comprised in the approximate two scale miles of track that the layout permits.

Space limitations have reduced the length of the three-line turntable to five feet, which allows for a tender loco together with five fifty-seven-foot coaches. The maximum length of train that can be handled by the passing loop at Glenarvon is about six feet, or say a 4-6-0 loco and six sixty-one-foot coaches.

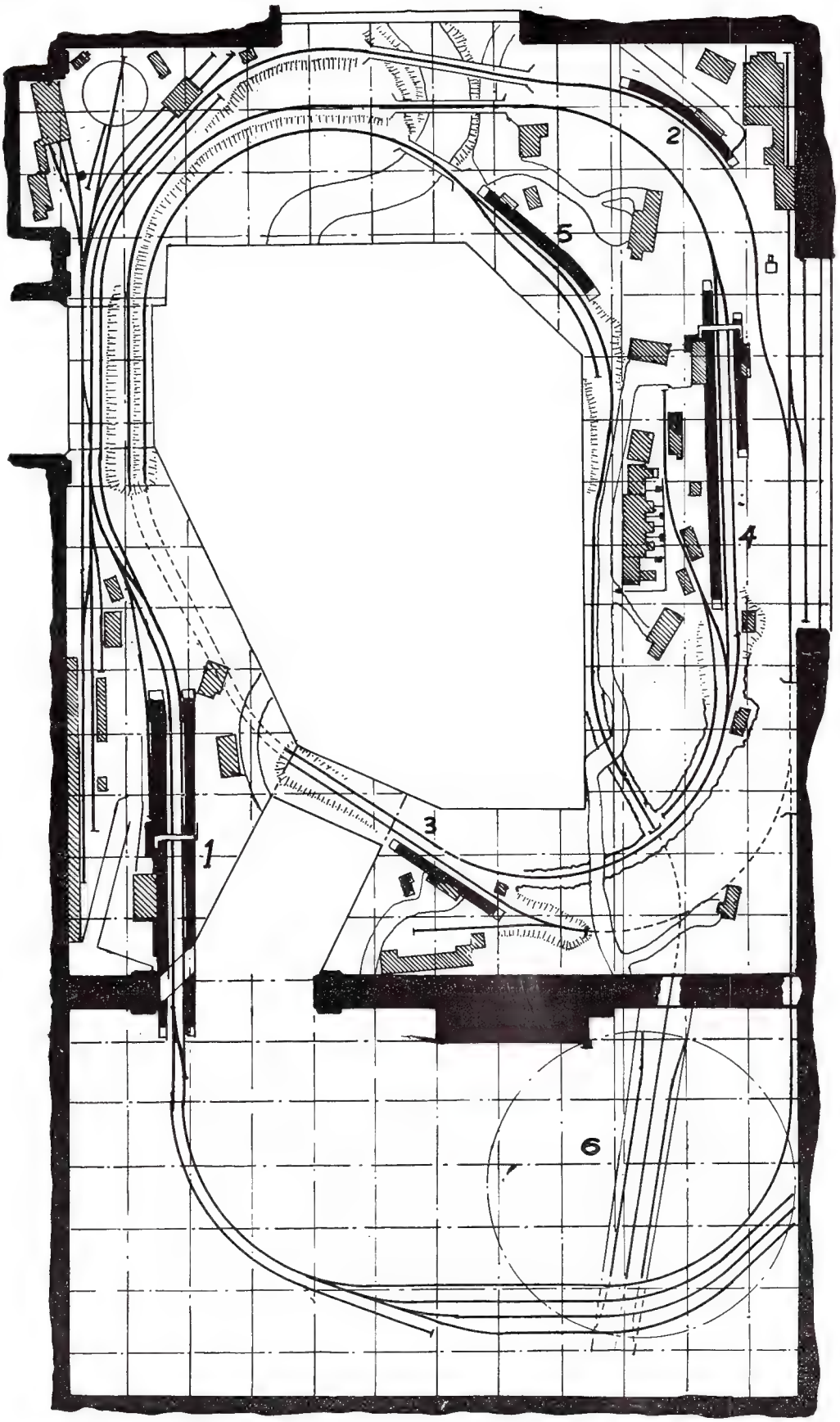
The scenic effects are intended to represent a railway that, having tunnelled through the main mountain barrier, winds up a river valley to reach its destination. This river it is forced to cross on several occasions as it passes from one side of the valley to the other in order to maintain a reasonable gradient in rather hilly terrain.

Heading : Glenarvon station. The line branching to the left leads to the goods yard.

Right : Strathness " high " looking south, showing road bridge over track from Speyside halt.

Bottom facing page : tunnel under Strathness road. A " flash " exposure has revealed the tunnelled tracks.

Left : the banks of the Spey, an evening scene. The lowest of the Spey bridges is just visible in the bottom right corner.



Notes on track diagram

1. Strathness terminus.
2. Grantoun halt.
3. Benlarich halt.
4. Glenarvon passing station.
5. Speyside halt.
6. Five-foot-long three-line turntable terminating line.

Layout is not portable.

Baseboards are "Weyroc" on 3in. by 1in. wood bearers.

Track is nickel-silver built from Gem components on ¼in. Sorbo rubber.

Minimum radius is 3ft. except Strathness carriage siding, 2ft. 10in.

Turnouts are home built and incorporate self-contained switches.

Crossovers are each a complete unit with straight section between frogs.

Maximum gradients are as follows: between Strathness and Benlarich 1 in 100; between lift-out section and turntable 1 in 97. Continuous loop is level. All stations and halts are level.

Projected extension. It is proposed to join up through annex as shown. This will add a second loop and permit the addition of several concealed storage sidings. Maximum gradient will be 1 in 78.

Photos on facing page

Top left: Benlarich halt. The left-hand road leads to Glenarvon station, the right-hand to Grantoun halt.

Top right: the left-hand control panel, controlling Strathness station. A similar panel controls the rest of the layout.

Bottom left: Speyside halt with Grantoun halt behind. The rear factories are Grantoun tweed mills.

Bottom right: the entrance to Strathness station, with signal cabin in centre.

Notes on electrification

System is two-rail at 12 volts D.C.

Supply is from mains through Kirdon 5-amp power pack.

Layout is divided into the following two sections:

1. Strathness—Grantoun—Benlarich.
2. Remainder of system.

Track between Benlarich and Glenarvon can be controlled by either section.

The two controllers are interchangeable in their functions. A multiple switch permits each controller to take over the duties of the other, or either to control the whole layout. All turnouts (except two), etc., are electrically operated.

Decoupling is also electric (H. & N. system).

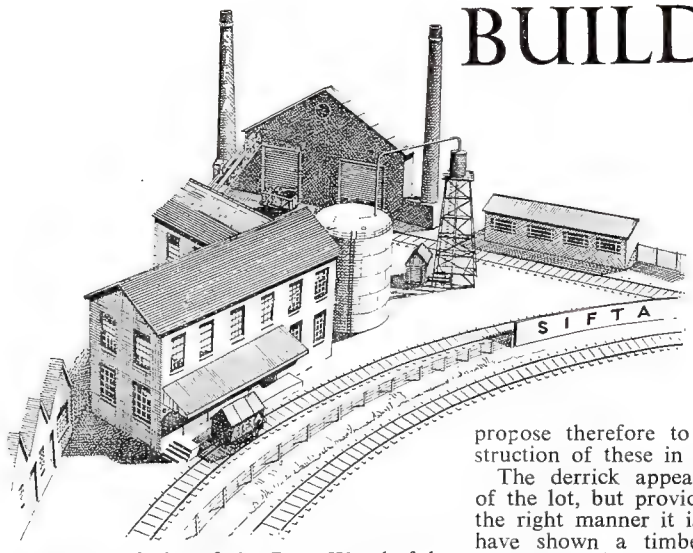
Signal operation electric and interlocked with points. Master switches are fitted on controller panel.

All return leads are led back through numbered terminal strips.

Turntable: remote control; operates direct from mains by clock type motor, controlled by 12-volt relay.

All rails are bonded and fed from below the baseboard at regular intervals.

BUILD A SALT WORKS



THE popularity of the Peco Wonderful Wagons has led to many inquiries for suitable lineside industries to utilize these attractive, colourful vehicles, and what better industry could one have for a start than a salt works ? In designing this model we have had to make some modifications, for, as might be imagined, a thoroughgoing scale model would occupy far too much space on the average layout.

We have set our salt works in a corner, for it is here that the average layout has the most room. To economize still further on space most of the buildings are low relief, and occupy only an inch-wide strip along the wall.

A salt works consists of a salt well with its associated tanks, a boilerhouse with chimneys and a selection of large buildings with windows—these are standard factory accessories and do not call for any special comment, for although we do give elevations for the entire set they can be built from several Bilteezi factory sheets. The important items which give the salt works its special character are the well, derrick and tanks, and we propose therefore to deal with the construction of these in some detail.

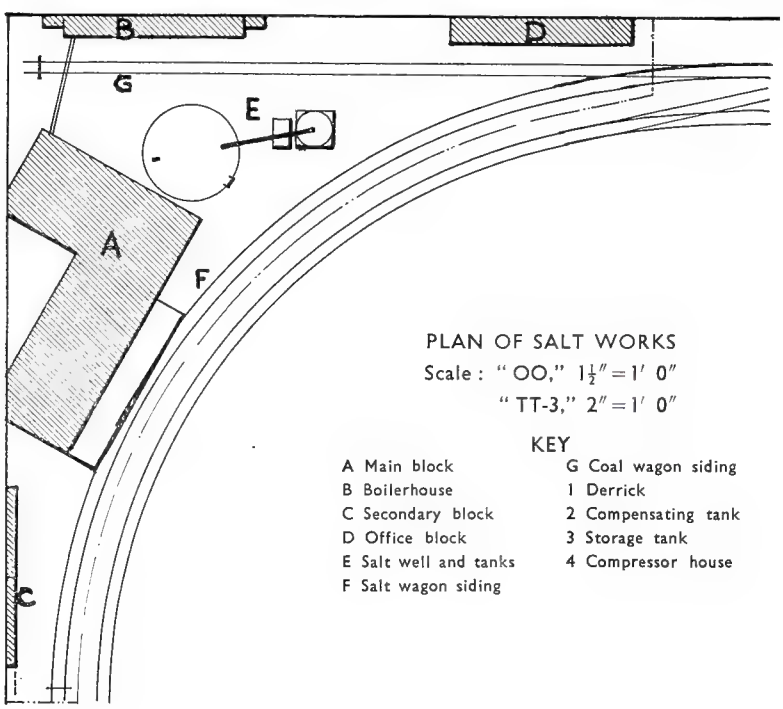
The derrick appears the most difficult of the lot, but provided it is set about in the right manner it is relatively easy. We have shown a timber derrick, which is made from $\frac{1}{8}$in. square balsa or obechi stripwood, and give a full-size template for its construction (this can be copied on tracing paper and used as a jig). Begin by cutting two uprights and place these on the drawing, holding them in place with pins. Next cut the cross braces, securing them in position with balsa cement. When this side is dry make a second, identical side. Now comes the tricky part. Two complete sets of cross bracing must be cut and cemented between the two sides, using the existing cross bracing as a guide. This is easiest done by cementing the top and bottom horizontals in place first, then the intervening horizontals, finally adding the diagonals, which will be cut to fit the existing structure. Those who can use a soldering iron may prefer to build a metal structure, using Peco bullhead rail and wire bracing. Both forms are equally correct.

The square top platform is cut from a sheet of balsa or ply, $\frac{1}{16}$in. thick, or from thin sheet metal with further rail bracing if a metal structure is preferred. Down the centre runs the pipe from the well, which feeds the compensating tank at the top. This tank can be made from a suitable diameter tube or heavy dowel, alternatively it can be built up by rolling some stout paper round a suitable former and covering it in several layers of gummed parcel tape. Super-detail enthusiasts can finish off the tank by plating it with carefully trimmed " plates " of gummed tape. A circular card cap is glued on top, then the tank is glued to the centre of the platform.

The platform must be surrounded by a handrail ; here a commercial wire fence can be used or a suitable rail built up. The wooden derrick could have a wooden rail, built of $\frac{1}{16}$in. square stripwood. Finally, when the structure is in place a length of standard signal ladder is added.

The main storage tank is less of a problem, as a slice cut off any cleansing powder carton will form its foundation. However, cutting a slice off one of these cartons does call for some care, as they are built up on a spiral and will gently unwind if attacked with anything but the best of tools. Perhaps the easiest way of cutting them is to saw them with a fine-toothed blade, despite the fact that they are made from card. Care must be taken when doing so to ensure that the cut is absolutely square. As these tanks are large it is well worth the trouble of plating them with thin card or paper as suggested for the compensating tank.

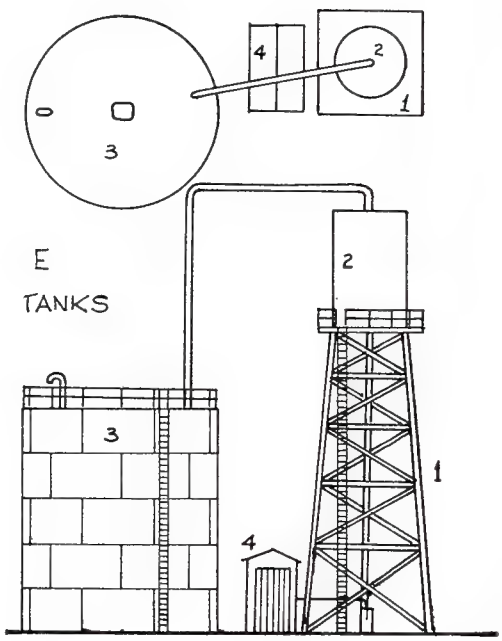
A card disc must be cut to fit the top of the tank and a wire handrail run round the

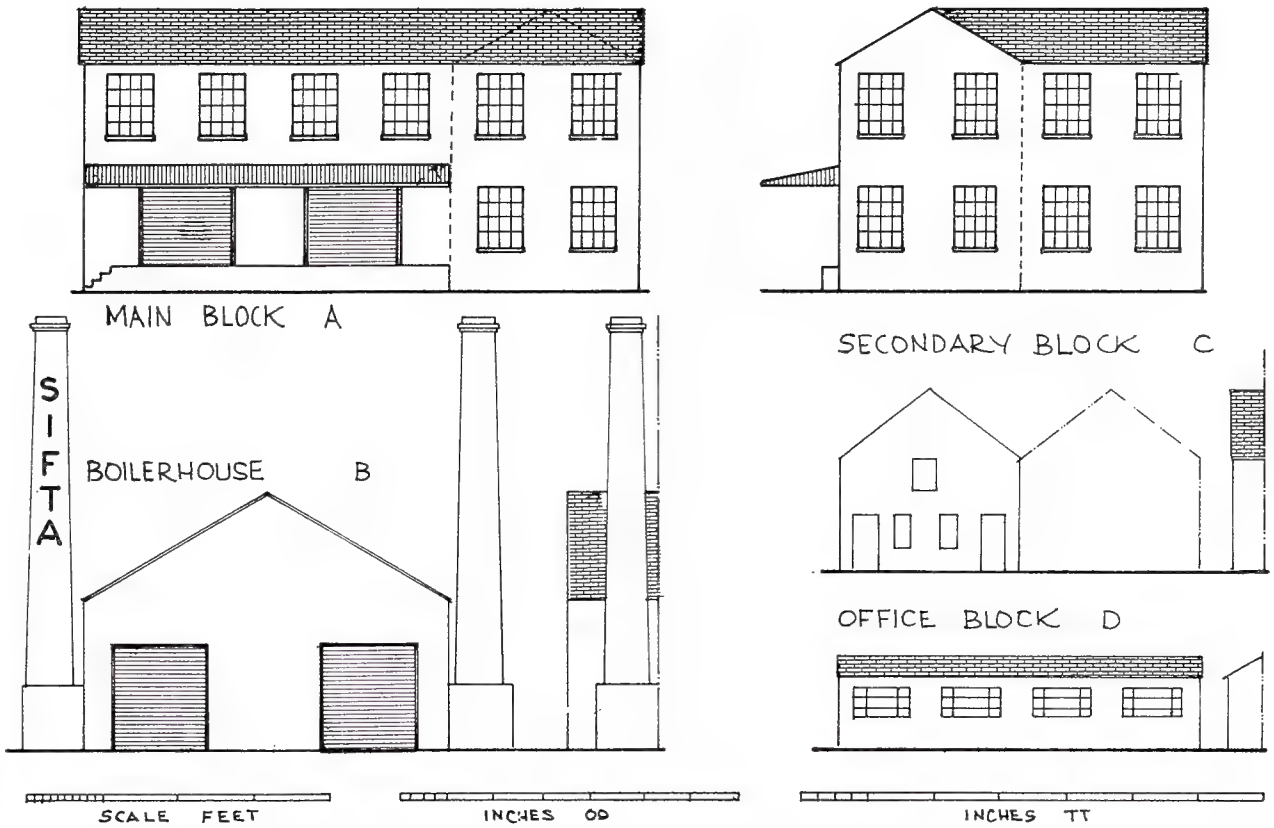


PLAN OF SALT WORKS
Scale : " OO," $1\frac{1}{2}$" = 1' 0"
" TT-3," 2" = 1' 0"

KEY

A Main block	G Coal wagon siding
B Boilerhouse	1 Derrick
C Secondary block	2 Compensating tank
D Office block	3 Storage tank
E Salt well and tanks	4 Compressor house
F Salt wagon siding	





top, with a ladder for access to the top and a manhole cover for access within added and a small swan-neck vent fitted in the top.

The next item to make is the compressor house. This is a simple structure measuring some 8ft. x 16ft., i.e. about the size of the average garage. Its main feature is a couple of large doors at one end, for easy access to the compressor and tank; come to think of it, it is to all intents and purposes a garage! It can be built up from card, or even carved from a solid lump of wood with a card roof. It would be made of anything from wood through corrugated iron to brick.

When these items are built they should be laid out on the site to see how well they go together, then glued in position. Then a pipe (bent from heavy gauge wire) is run from the centre top of the compensating tank and a further pipe from the compressor house to the "rising main" from the well to the compensating tank. Meticulous modellers can add a couple of valves to these items if they so desire—the handwheels can be press fasteners or model brake wheels.

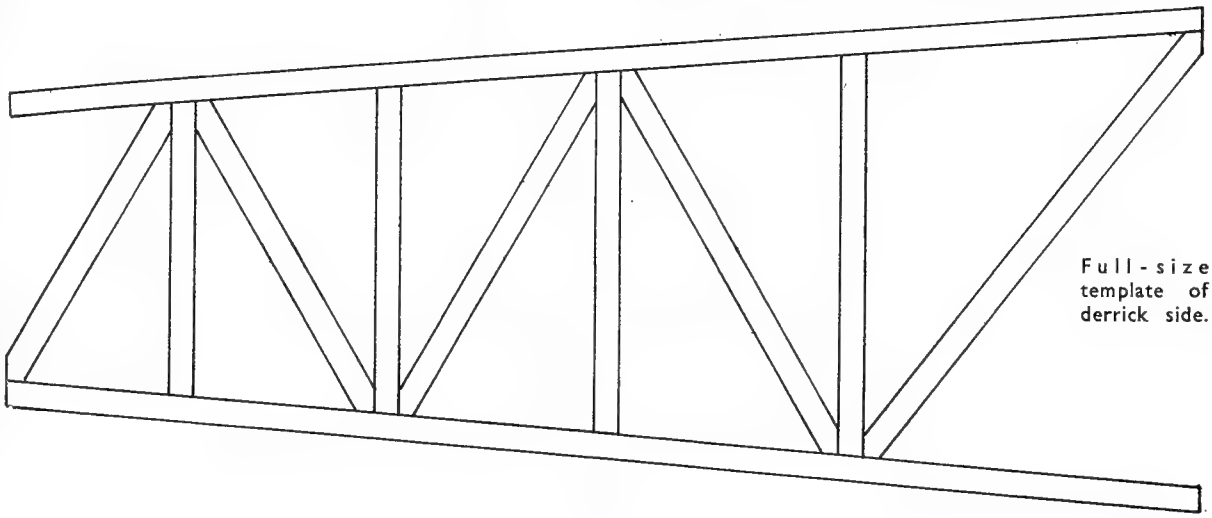
Having tackled this part of the work, the main buildings should then be made, following the standard methods of construction or, as suggested, using Bilteezi parts.

Now for the finishing touches. The whole factory is surrounded by a fence, a gate protecting the private sidings—this can be half a level crossing. Any standard fencing is used, but only one type can be adopted, though a partial wall can be employed. The boilerhouse and main block should be linked by steam lines—these could be carried by lattice girders.

A selection of miniature workmen, with some office personnel, is obligatory, as are cycle racks and heaps of debris.

The tanks could be finished in dark grey or aluminium, the derrick black, the woodwork on the buildings would almost certainly be that most serviceable of colours, olive green.

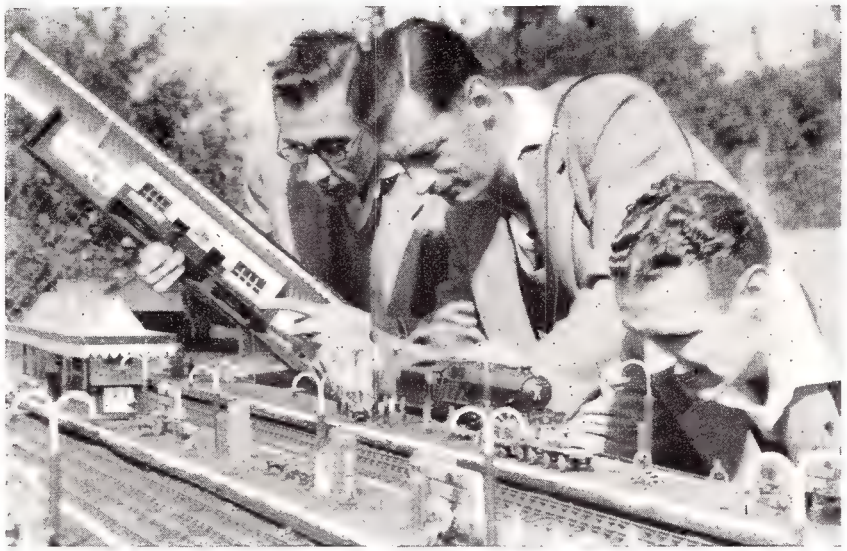
If space is unduly limited the salt works can be reduced to a single siding placed two inches away from the backscene, with the boilerhouse and main block behind in low relief and the tanks and derrick in front.



Full-size template of derrick side.

WHITHER CREWCHESTER?

by John L. Ray



The three Johns at Crewchester. Reading from left to right: John Watts, John Ray and John Blair.

NOT long ago John Blair said to me, "You know, even if we wanted to, we could hardly electrify the Crewchester Line after all we've said about spring-drive!"

I looked at him a little uneasily. "Do you want to electrify it?"

His answer was sufficiently rude to assure me that he has suffered no change of heart as far as clockwork is concerned, but his comment did set me thinking. He who rides on a tiger's back can never get off—and the same horrid fate is threatened to the man who rides a hobby-horse too assiduously.

So I did a bit of heart-searching.

There is every possibility that in the not-too-distant future it may become necessary to dismantle the Crewchester Line and rebuild it at a new address, a prospect both frightening and stimulating. The herculean labour of transferring the vast network of trackwork and huge array of rolling stock is alarming, but the opportunity of rebuilding and incorporating all the lessons learned from past mistakes is exciting.

Now it is not my intention to squander valuable space here building castles in the air (they are private property anyway), but to do a bit of mental stocktaking and try to assess just what we have learnt. It is just possible that, by so doing, others may avoid some of the pitfalls we have encountered, or even be encouraged by our modest successes. But—and I cannot overemphasize this "but"—the remarks which follow are only an opinion—an opinion formed in the light of what John Blair and I believe to be the ideal railway for us.

Let us start with fundamentals. We will assume that we are to be faced with a new home, probably a very ordinary suburban semi-detached or detached house with an average-sized garden, and we may now start more or less from scratch. One thing is quite certain, our track will be standard gauge "O," made of brass, with wooden sleepers and battens mounted upon a baseboard of solid construction. The motive-power is also certain—spring-drive, for after eight years' experience of this we are more than ever convinced that it is the ideal power for our tastes. It is, of course, quite impossible to say what form our layout will take, for that will depend so much upon what space is available to us; but it is fair to say that, all things being equal, we shall most probably try to build a layout which is basically an end-to-end affair, with perhaps a section designed for continuous running (or possibly an out-and-back section). This latter provision is for the occasions when only one operator is available. The present layout is continuous, but, as we are keen to develop the signalling, this does raise difficulties when it comes to "box in advance" and "box in rear." It is true that had we continued with the plans for the present site our line would have become an end-to-end layout, but it does look as if these will not now materialize.

Another major problem, and one which gave us much cause for thought when we were planning the present line, is the height above ground level at which the line is to be built. At present it is three feet above ground level, and its advantages stand out. Handling and track maintenance are both easy, and one does obtain far more realistic views without having to assume postures which are undignified and inconvenient. The big drawbacks are the enormous tasks involved on the civil engineering side (embankments and hills) and the high cost of uprights to carry the baseboard. Lines built at ground level are far from satisfactory, for not only does one have to crouch down to handle the trains (a consideration which increases proportionately with one's age), but the only views obtained of the layout are from a height, and a sense of remoteness from one's handiwork is experienced. Nature

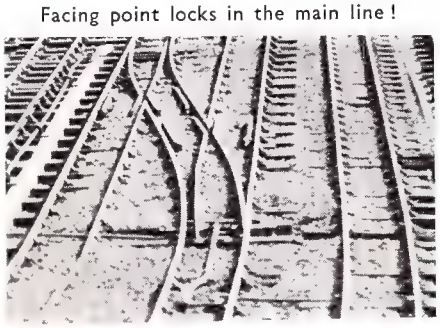
The L.N.E.R. Pacific rounding a large-radius curve.

seems to conspire at many seasons to sabotage the line built at ground level, what with worm-casts, fallen leaves, heavy rainfall and other annoyances, so it would appear that a compromise should be adopted. I must confess that when the Crewchester Line was built I had never heard of the "operating pit" method, whereby at strategic points (stations, junctions, etc.) a pit is dug from which one may handle traffic at a convenient height. This seems to me to be an admirable solution to the problem, for by adopting this method the line need be raised only eighteen inches or so above ground level, and by sinking the operating pits to a similar depth we have our line once again at accessible height. This has the added advantage of interfering less with the general layout of the garden, and would possibly be more acceptable to the household authorities. Drainage of the pits would have to be considered, but this should not present insuperable difficulties, and it might even be possible to disguise these excavations as sunken gardens.

A most important feature of any garden railway is the provision of a line running into a garage or shed in order that stock may be run in without having to revert to "crane shunting."

So much for the general principles of planning. The next point to consider is how we are to improve the general running of the line. Where have faults most commonly occurred, and how shall we avoid them? Undoubtedly the greatest natural hazard on a model railway is the facing point, and here we may take a leaf from the book of prototype practice. Fit a locking bar. It really is just as simple as that. We solder a strip of angle brass on to the stretcher bar and drill two holes, the same distance apart as the throw of the blades, to receive the snub-nosed end of a length of $\frac{3}{32}$in. brass rod. This rod is then connected, via bell-cranks, to the lever frame, and acts not only as a lock but as a detector, and adds a degree of realism to the signalman's job. In any case, as in full-size practice, facing points are to be avoided except where absolutely necessary.

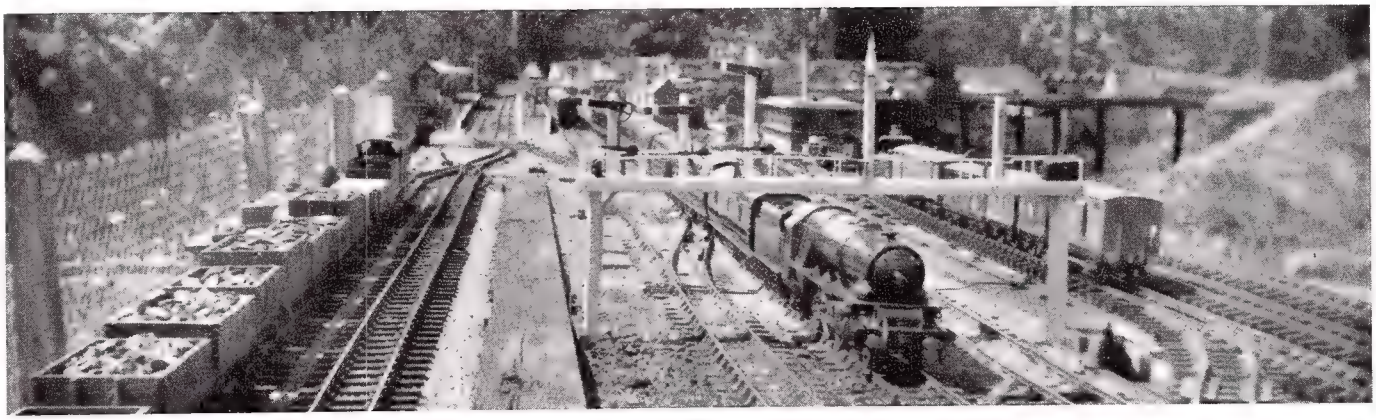
Facing point locks in the main line!



Bad rail-joints provide both the cause of many derailments and a source of perpetual wonder to the writer! It is one of the great unsolved mysteries of railway modelling that a train will negotiate at speed, and with apparent safety, a joint where the lines are not level, are out of alignment, and where a quarter-inch gap occurs; yet the same train will persistently derail at a joint which appears to be a mere couple of thou out! One of the principal causes of bad joints on our line has been the imprudent practice of laying track *across* planks instead of *along* them. The baseboard planks which are at right-angles to the direction of the railway tend to shrink in dry weather, ballast gets between them, and when the wood tries to swell again in wet weather it cannot resume its former position, and the result to the permanent way is to make it resemble the big dipper at Blackpool. It is noticeable that where we have covered our baseboard with roofing felt before laying track we have had appreciably less trouble. Moral—the omission of roofing felt is a false economy. Well-built track, carefully laid, and soaked twice a year (during a dry spell) in creosote (preferably hot), will stand up to anything the weather likes to send along. While on the subject of track-laying, ballast must be mentioned, for some layouts I have seen are, to my mind, spoilt by neglecting to provide ballast—the final touch which convinces the eye. I have heard no really cogent argument against ballast; the excuse that it gets between the point-blades is soon disposed of, for a quick walk round the layout armed with a small screwdriver will soon put that right. Creosote does tend to bind ballast, as well as giving it a delightful colour and odour, and we have always found that a fairly fine chicken grit, bought for about 2d. per pound (or less if bought in bulk), does the job beautifully.

Superelevation of curves on fixed track carrying non-sprung rolling-stock is, I know, a controversial subject, but John Blair has fully converted me. Although scientifically it may serve no useful purpose, it is well worth the extra trouble for its appearance. The head-on view of a train coming round a section of curved track canted slightly over gives a most satisfying impression. (Details of our method of constructing curved track may be found in the RAILWAY MODELLER, August 1955, page 176, second paragraph.)

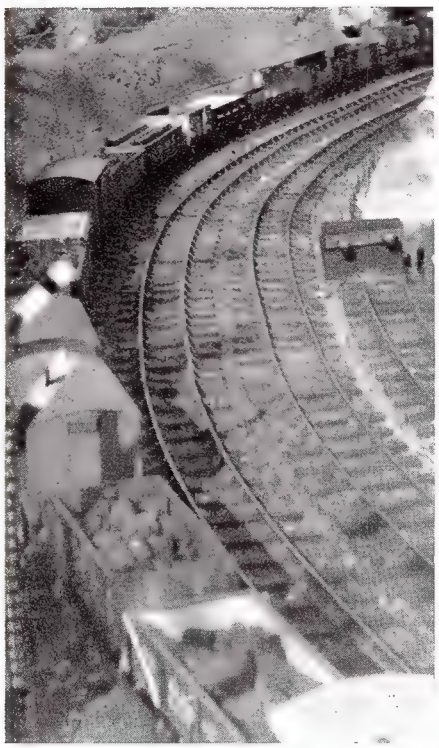
We come now to another lesson which we have learned the hard way—the provision of adequate sidings. I think it is true to say of almost any layout that one should aim at providing as much siding footage as there is main line. It seems that one can never have too many sidings, both for locos and coaching stock, to say nothing of goods yards. Our own Crewchester station is fairly commodious, providing on both the up and down directions three through roads, yet even here the rapid successive arrival of three trains in the same direction can give the station-master quite a headache if he is to avoid a traffic jam. Our new layout, therefore, will have plenty of sidings.



Extensions in progress at Crewchester—even so, siding space is limited!

Signalling on the Crewchester Line has taught us some valuable lessons, and I must confess that I did not realize quite how much room one must leave for signal and point rods beside the line. For an outdoor layout we have found that $\frac{3}{32}$in. brass rod, although overscale, is the most practicable material to use, and even twelve parallel rods neatly laid do not appear ungainly. $\frac{3}{32}$in. brass rodding does not whip even when used over distances as great as seven or eight feet, whereas the more commonly used $\frac{1}{16}$in. wire does bend easily. For short cables nylon fishing line may be used, but this is not recommended for distances of over twelve inches.

It is impossible to overlook that bogy of model railway running, buffer-locking. While it is quite true that the garden railway can provide the luxury (and what a luxury it is) of fifteen-foot-radius curves, one is nevertheless faced with the problem of points, and it is on these that one strikes the buffer-locking snag most frequently, particularly on crossovers with their reverse bend. Our own partial solution is to fit all goods stock with overscale non-lock buffers, and to try to make all our four-wheeled stock up to a given weight.



The beauty of fifteen-foot radius.

This brings me to wheels. If we could afford it, John and I would fit every vehicle we possessed with cast-iron wheels, for they not only run more truly, but provide weight just in the right place. Cast-iron wheels seem to pick up less dirt, and what dirt they do accumulate is far more easily removed than in the case of alloy wheels (which are inventions of the devil).

Well, there it is. I have avoided reference to detailed methods of going to work, as these vary with one's temperament and capabilities, but I have tried to summarize the broad principles of building a garden layout in coarse-scale gauge "O." The problems are extremely elementary, especially in view of the fact that we have none of the headaches associated with electricity—headaches which must amount to brainstorms when faced with the problems of protecting wiring from the vagaries of the British climate.

What are the prospects facing the man who wishes to build such a railway today? Many would have us believe that they are indeed gloomy, that gauge "O" is doomed, that manufacturers are abandoning us, but though there is an element of truth in these arguments it is very much exaggerated. The Gauge "O" Guild, started less than a year ago with sixty members, has grown rapidly to nearly 200 and is still increasing. Every aspect of gauge "O" is within the scope of its interest and activity, and much has been accomplished already. The newsletter issued to members is full of just the information that has always been so difficult to find, as well as being an exchange mart of views, news and items for sale. Mr. Van Riemsdijk is making (for members only) an improved design of his famous 0-6-0 tank with controlled speed mechanism; Mr. Dettmar, of Surrey (another doyen of spring-drive), is offering special facilities and terms to guild members, as well as a unique service of repairs. All this, and much else, for only ten shillings per year!

Bassett-Lowke Ltd. still do much to cater for gauge "O" in clockwork, steam and electricity, as do Mills Bros. of Sheffield and Walkers and Holtzapffel of London; and the Model Engineering Centre in Wade Lane, Leeds, has a window full of second-hand gauge "O" locos the like of which I have not seen for a long time. Tyldesley and Holbrook of Manchester have a modellers' paradise on their first floor in Deansgate, and I doubt if there is a more amiable and helpful dealer in the trade than Mr. Holbrook. Hattons of Liverpool have also been the source of some of the stock which runs on the Crewchester Line. Travelling about the country as I do, I have been fortunate in being able to visit all these places. Track components are still in plentiful supply and points are easy to build. The rapidly increasing popularity of the garden railway has not escaped the notice of the trade, and I am sure we shall see the fruits of these observations in due course.

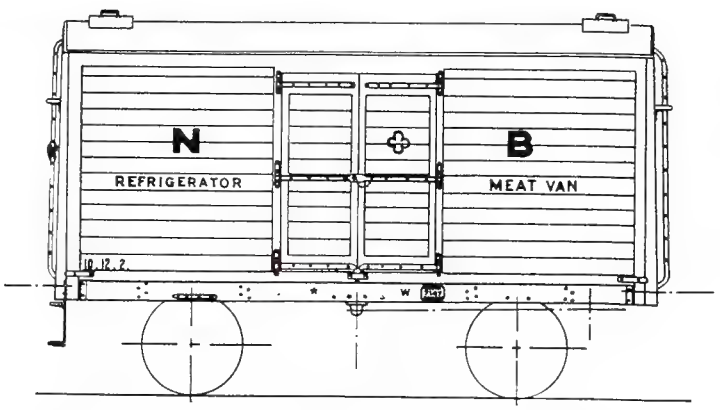
Whither Crewchester? I don't know—but it will certainly be gauge "O," out of doors, and clockwork.

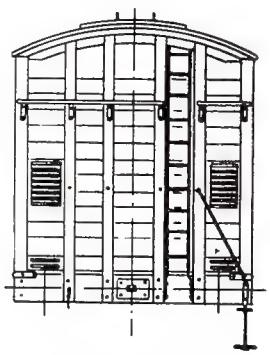
FROM SIR ERIC'S NOTEBOOK

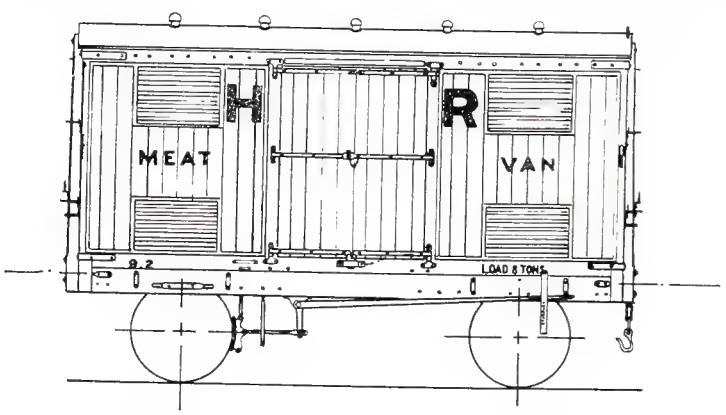
NORTH BRITISH RAILWAY
Refrigerator Van

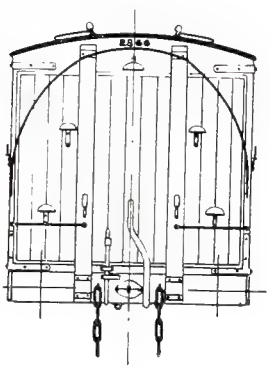
Carried on Mansell or, later, pressed steel disc wheels with wagon axleguards. Westinghouse and vacuum fitted and steam heating piped.

Painting: body sides, ends and underframe light chocolate; ironwork black; roof and tyres white; writing mid chrome yellow; Mansell wheels, when fitted, had the normal red-brown centres, but disc wheels were, apart from the tyres, black; steam-heating pipe connection bright red.









HIGHLAND RAILWAY
Meat Van

Built by R. Y. Pickering in 1911, these vans were designed to replace the out-of-date Type T vehicles, which were relegated to other duties.

The Highland had no refrigerator vans of its own. The little refrigerator traffic which they had was handled by foreign vans.

These vans were vacuum and Westinghouse piped, but oddly enough not fitted for automatic brakes. They were provided with pressed steel wheels and single lever brake on each side operating on one wheel. Screw couplings and safety chains were standard.

Painting: body and underframe standard olive green; ironwork and running gear black; roof and tyres white; writing mid chrome yellow. The vans were varnished. Numbers were 2866 to 2885.

CANALS

by Stanley Elson, A.R.I.B.A.

Water exercises a fascination, even in the model, and a canal is an ideal way of bringing it into the layout.

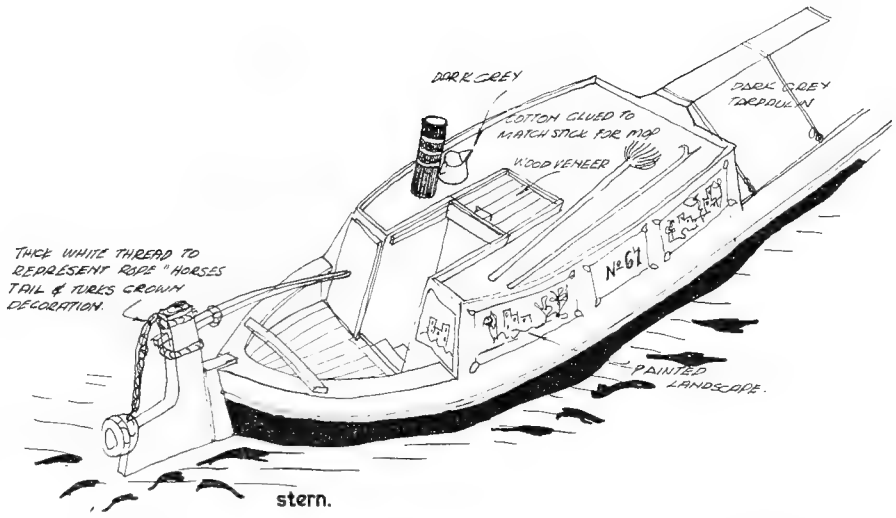
IF you are really tight for space on your model railway, but feel that some water is required to liven things up, a small canal for narrowboats is undoubtedly the answer.

Narrowboats—for those who do not know—are very narrow motor barges about 60ft.-70ft. long and a maximum of 7ft. wide. Therefore a canal little more than 1¼in.-1½in. wide can easily be incorporated into even the smallest layout.

The illustrations show many typical features of the canals—boats, locks, lock-keepers' cottages, and an inn. I will not say much about the buildings, which are very simple to build, but instead will confine myself to describing how the barges and locks themselves can be constructed.

As these barges are very shallow in section, ⅛in. sheet obechi is used to form the foundation, and the rest of the superstructure is modelled up using card and wood.

The first step is to draw out the barge full size in plan and elevation to 4mm. scale. All unnecessary detail can be omitted and only the bare outlines are essential to work from.



A sheet of obechi ⅛in. thick, obtainable from any aircraft model shop, is marked out, showing the outline of the plan, and this is then cut, using a sharp blade.

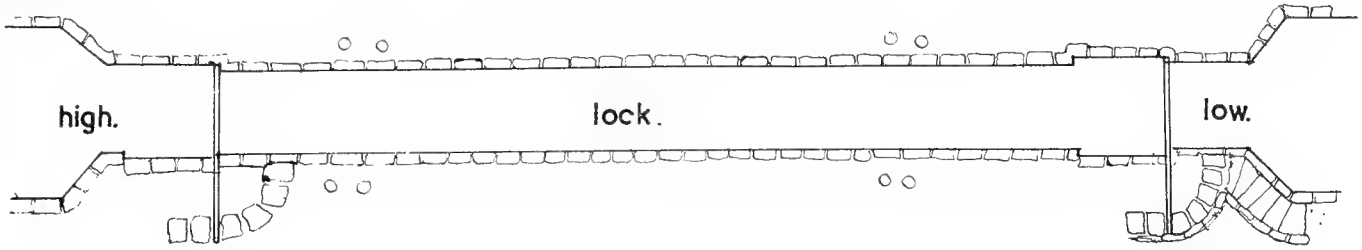
As both the bows and stern have an upward sweep, two pieces of ⅛in. obechi—one for each end—are glued into place and, when dry, carved to conform with the general outline of the hull.

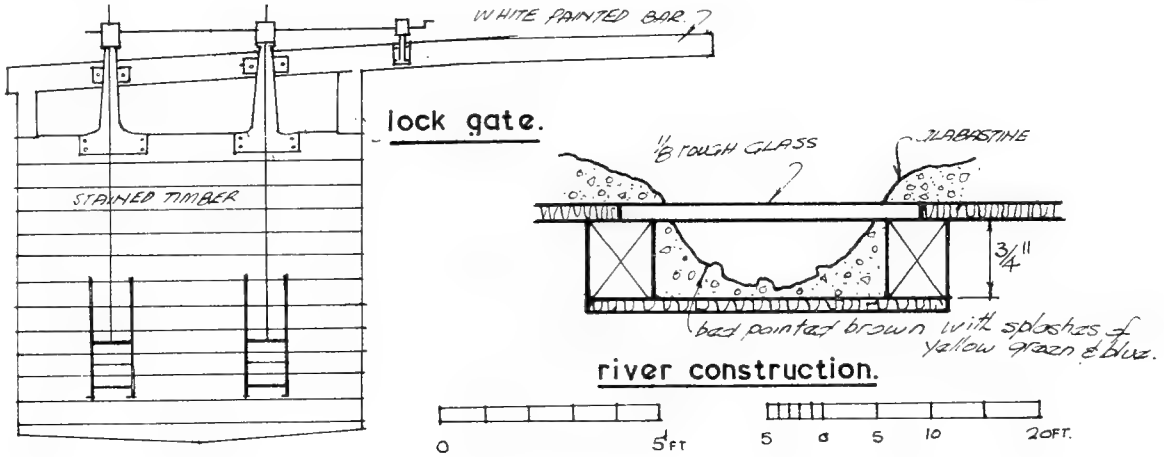
The position occupied by the cabin is next marked out accurately on to the hull, and the rectangle formed, drilled and cut out with a fine piercing saw or a sharp-bladed knife. The edges should be trimmed up with a sandpaper block and the hull rubbed down to a fine finish with grade O glass or garnet paper. Decking can be scribed on, using a steel rule as a guide line.

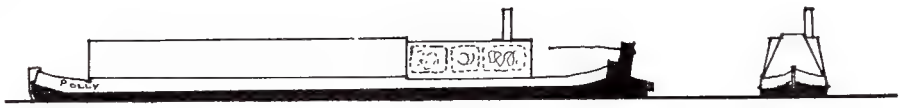
The gunwales, which form a small wall above the deck all round the ship, are cut from a piece of card, preferably in one strip which is joined together at the bows and stern. A certain amount of trial and error is necessary at this point to ensure that it fits cleanly and squarely on the hull. When this has been achieved the card is glued into place on the hull, using pins if necessary to keep it in position while the glue is setting.

The roof of the cabin can be marked out next on a card of medium thickness, say about $\frac{1}{16}$in. thick, and the hatch built up, using thin card for the runners and a piece of $\frac{1}{32}$in. mahogany veneer for the hatch itself. These parts should all be assembled for fitting to the sides when ready.

The tarpaulin which covers the hold is made up from a piece of thin card about postcard thickness, which is obtainable in a variety of colours and costs 7d. for a







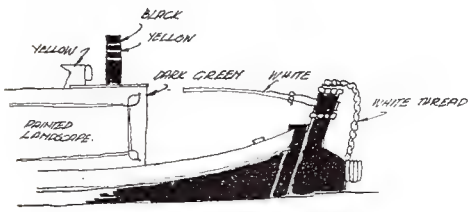
7'0" or 280mm.

side

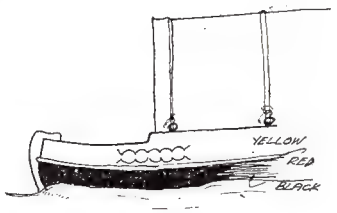
7'0" or 28mm.

front

plan.



stern elevation.



bow elevation.

sheet 20in. x 25in. at your local art shop. To ensure that the card folds cleanly a line at the corners is scribed with a sharp knife, but be careful that you do not cut right through the material. When the two creases have been made it is glued to the hull and held in place with elastic bands, or cotton wound round the hull for the full length of the hold.

The end section is made from a thicker piece of card cut to the correct contour and set in place. The two small panels on either side of the companion way are made from thin card, which is cut to include the side walls to the two steps. A small piece of card, or preferably of veneer, is glued to the left-hand wall to represent the door. The steps, 2mm. deep, are cut from thin card and glued into place, using a pair of tweezers to set them into their correct positions.

The rudder is made from a piece of $\frac{1}{8}$in. obechi carved to the correct contour and sanded down to about $\frac{3}{32}$in. thick. The rudder arm, because of its small size, is best made from a piece of 20 s.w.g. piano wire, forced into the rudder at the correct angle before gluing the rudder to the hull.

Although the chimney can be made from a piece of dowel, a small tube of paper 2mm. in diameter gives a far better appearance and is certainly worth the little extra trouble involved in making it.

The ropes holding down the tarpaulin are pieces of cotton tied to the heads of small pins and with the surplus end cut off close to the knot. Rope decoration is made up with thick white thread glued to the appropriate parts, as shown in the accompanying sketches.

Other small details, such as the boat-hook, are made up from a piece of 20 s.w.g. wire with the handle end painted a light brown to within $\frac{1}{16}$in. of the hook, which is left plain. The mop is easily modelled, using a matchstick sanded to a circular section, with small pieces of white cotton glued to one end.

These two pieces may be placed on the model if so desired, but if your railway, like my own, is portable, I strongly advocate their being firmly stuck in place, but this should be done after the rest of the model has been painted.

The colour scheme is indicated on the drawings, but perhaps a word about the area marked "landscape" will be of help. Due to the small scale, and possibly to lack of artistic ability in the modeller, no attempts at painting such a tiny picture need be made. Instead, small splashes of greens, greys and browns with spots of red or yellow are sufficient to represent the original.

When the model has been completed, glue on the mop and boat-hook, and a small coil of thread (to represent rope) up in the bows, and finish with one coat of clear varnish. This will give the appearance of well-kept paint, and as the bargees are very boat-proud a nice clean barge will not be out of keeping with the rest of your model.

LOCKS

A lock, as most modellers will know, is a method of raising or lowering the water level in order that a ship may proceed from one level to another in hilly country. Thus it is essential when modelling a lock that some attempt should be made to give this impression. Even if the difference in level is only $\frac{3}{4}$in.-$\frac{1}{2}$in. it will be sufficient to give the right effect. Another important point to remember is that the entrance to a lock should be wider, to enable two boats to pass each other easily, and I suggest that a minimum width of $2\frac{3}{4}$in. should be aimed at. The drawings of the locks, together with other details, are sufficiently explanatory, so that the modeller can construct them comparatively easily, but perhaps a word about the representation of water may be of help.

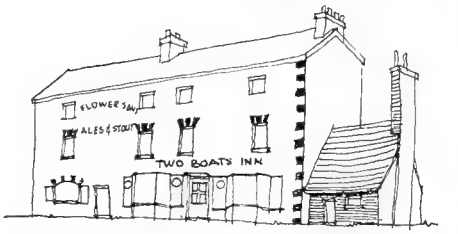
There are two main methods of modelling water: one is by using glass or perspex in one form or another, and the other is by using cellophane.

In the first case, the bed of the river can be properly modelled some $\frac{1}{4}$in.-$\frac{1}{2}$in. under the glass. Stones, sponge weeds, etc., can all be added, but do not make anything too bright in colour, for canals are often rather muddy. The glass, which can be of the ordinary clear variety or slightly hammered, is then placed over the bed and the banks are modelled over it to conform with the river bed below. Small pieces of olive green paper stuck on to the glass, with a touch of white here and there, give an excellent representation of water lilies. If your model is a permanent affair, this method will certainly repay any extra effort involved.

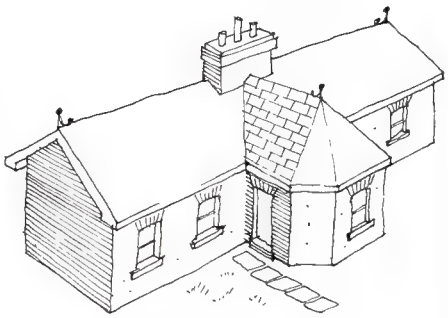
If, however, your model is a portable

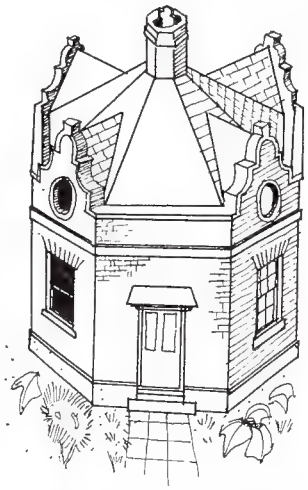
CANAL-SIDE SKETCHES

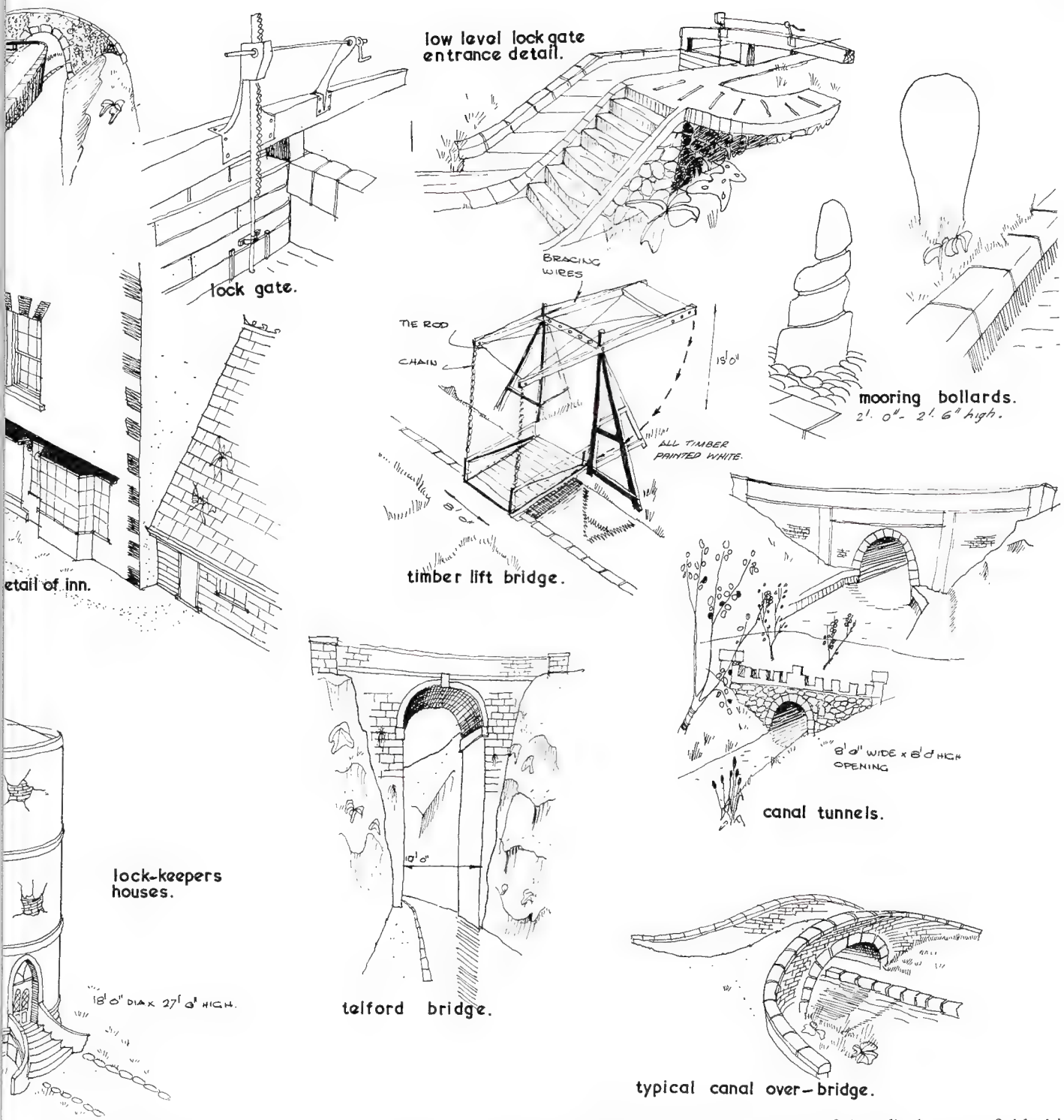
lock and over-bridge.



canal-side inn.







layout, then glass, besides being heavy, is rather fragile, and the second scheme is strongly recommended.

In this case, the base of the river is flat and at the correct level required. The bed is painted dark brown, with splashes of bright colours (red, green, yellow and blue) and black and white added when still wet. The colours should be worked into the brown sufficiently to remain still recognizable, but without hard, sharp edges. When the bed is dry it is painted with a coat of glue, and a sheet of cellophane is stuck on top. This will wrinkle, but as this is the effect aimed at no attempt to obtain a smooth finish is necessary.

If, however, smooth, glassy water is wanted, a thin line of glue along the edges of the canal is sufficient to hold it in place, and when dry the cellophane is drawn tight. The banks are then modelled over the edges of the cellophane and finished in the normal way with Alabastine and sawdust to represent grass and plain Alabastine for paths, spread over hessian or netting.

When properly finished, with locks, bridges and a lock-keeper's cottage, the canal will add considerably to the charm of your railway and will help to fill in that odd corner which up to now has looked rather bare.

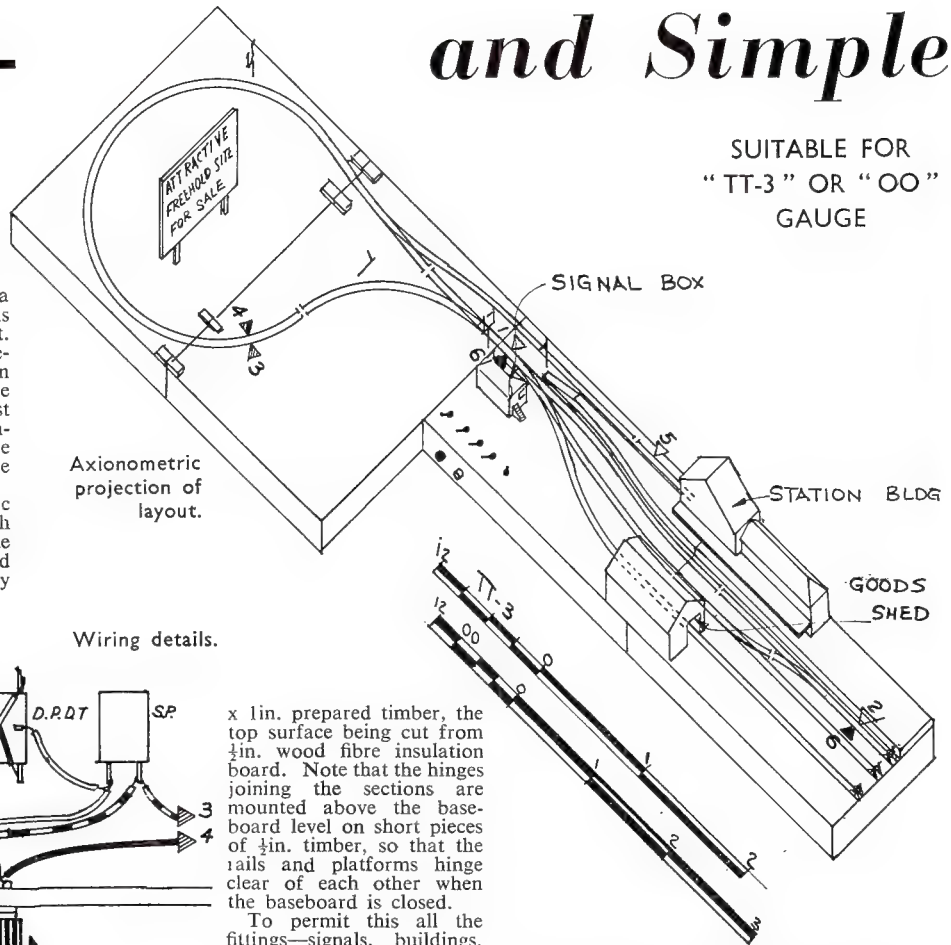
SMALL— and Simple

A Portable Layout designed expressly for Beginners

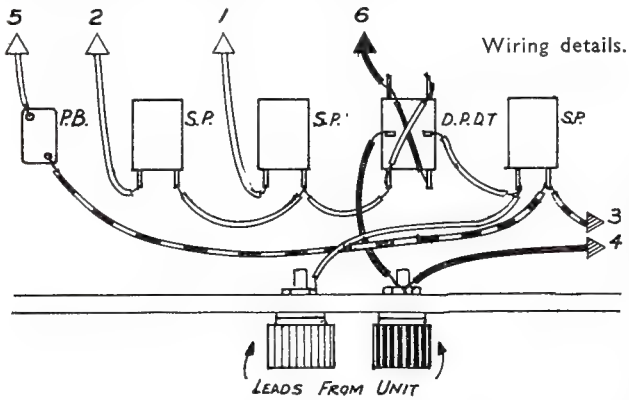
SUITABLE FOR "TT-3" OR "OO" GAUGE

A FEW weeks ago we were asked by a serviceman for our recommendations for a small portable "TT" layout. Some calculations (on the back of an envelope) showed us that a line could be built on two folding boards which would provide quite a fair amount of operating interest coupled with simplicity and ease of construction. As a layout of this nature will be of value to many readers, we have drawn the plan out in some detail.

As can be seen from the axionometric drawing, the basic plan is a terminus with reversing loop. As a radius of 11in. is quite practicable with "TT-3," the loop is contained on a 3ft. x 2ft. board, while the majority of the terminus goes on a 4ft. x 1ft. board. For extreme portability each of these baseboards is hinged in the centre, while junctions between the two boards are made with further hinges from which the pins have been removed and replaced by close-fitting wire handles.



Axionometric projection of layout.



Wiring details.

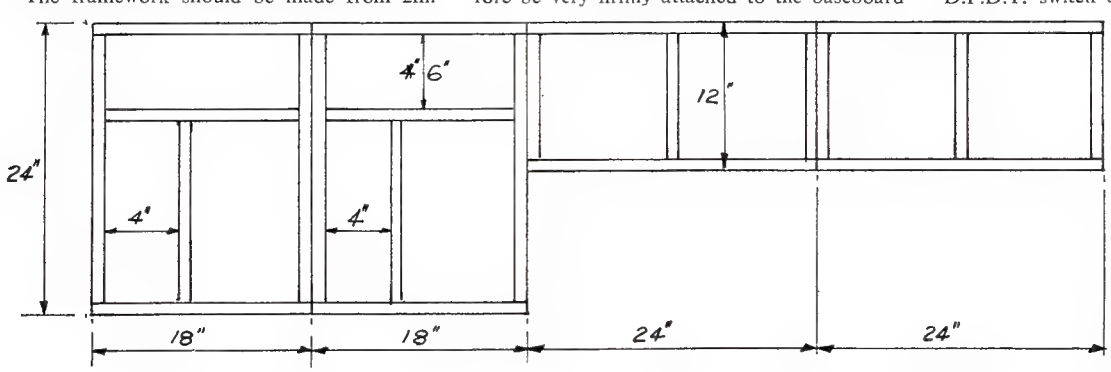
The plan of the framework is given, with overall dimensions. We have designed them to avoid all halved joints; plain butt joints suitably reinforced with metal angle brackets are sufficient. Note how the cross bracing is offset on the loop baseboard to bring it closer to the track centre-line—there is little point in supporting the softboard away from tracks, and when building baseboards for primarily scenic sections this can often effect an improvement with a slight economy in timber.

The framework should be made from 2in. x 1in. prepared timber, the top surface being cut from ¼in. wood fibre insulation board. Note that the hinges joining the sections are mounted above the baseboard level on short pieces of ½in. timber, so that the rails and platforms hinge clear of each other when the baseboard is closed.

To permit this all the fittings—signals, buildings, etc., except for the platforms themselves — are portable. This is best arranged by cutting a loose floor from ¾in. thick timber, over which the building is a push fit. This false floor is then glued and pinned to the softboard in the appropriate place. Note how the hinges on the station section are hidden beneath the station building and goods shed. Further buildings can be added on the loop section if desired, though, as with the present design, the baseboards close together too closely for these buildings to remain fixtures and provision must be made for their storage elsewhere when the layout is out of action.

There is no doubt that this could largely be avoided by locating the hinges at a higher level, and this can be done if desired, though we must point out that it will involve greater strain on the hinge blocks, which must therefore be very firmly attached to the baseboard frames, while the space occupied by the closed baseboards will be even greater.

Electrical joints between the sections are made by spring brass contacts on the mating faces. We have given the wiring in some detail, for it incorporates a very simple means of overcoming the difficulties normally associated with reversing loops in two-rail. Normally the loop is fed through an additional double-pole double-throw switch, so that it is necessary to stop the train while it makes its circuit of the loop. In the case in point this is undesirable, and therefore the terminal roads are fed through the change-over switch, while the loop is fed directly from the controller. Thus, after the train has entered the loop, this switch is thrown and the loop point reversed, so that the train can return direct to the terminal roads. A further refinement for those whose electrical and mechanical abilities are in no doubt is to couple the D.P.D.T. switch and the loop junction point so that the polarities are always correctly aligned. We have, however, omitted this, as our intention was to make the layout as simple and straightforward as possible, for we have kept in mind the problems of the young beginner, whose space, time and cash are necessarily restricted. We have indeed left the design deliberately open, including only the absolute necessities.



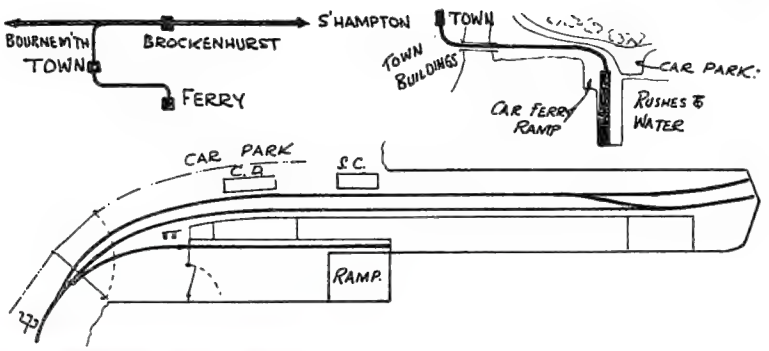
Plan of framework for "TT-3" layout.

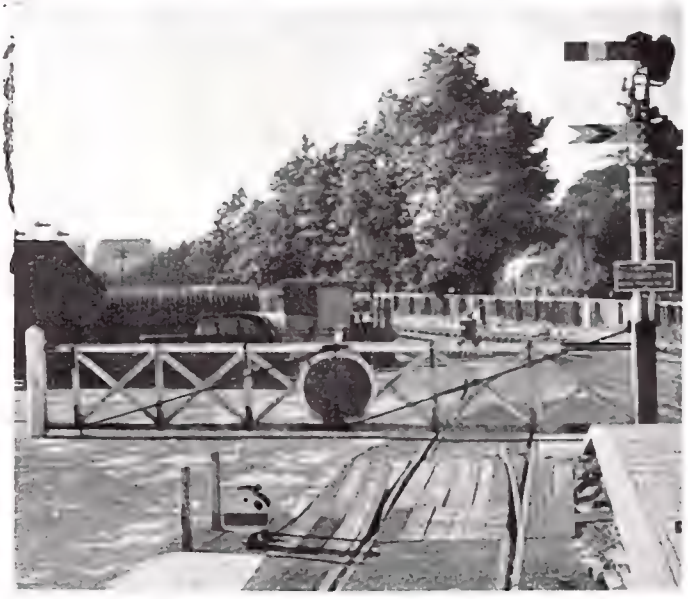
Prototype of the Month

LYMINGTON PIER

Photos by A. V. McCullach

For a small island site what better prototype could you have than Lymington pier? As the plans and photographs show, it is easily accommodated on a baseboard, with the edge finished to represent the pier facing.





ROUND THE HOUSES

by C. J. Freezer

IT is lucky that I spent a good deal of time during my apprenticeship working on (and in) marine boilers—it prepared me for work in the loft during this glorious summer. However, it does make soldering easy—the flux is nearly molten. Despite this, progress has been steady if not spectacular.

Shortly after the last report on progress* was written, Graham Overton and John Hicks came avisiting and I found to my dismay that the space that seemed so ample for one was rather cramped for three. At the time Graham suggested that I connected up the line through Pype tunnel to join the end of Tregunna platform road and so make a continuous run, a possibility that I had quite frankly overlooked. The more I thought about it the better I liked it, with the upshot that a week later I began construction and seven days after that had the satisfaction of seeing the first train run round the completed circuit.

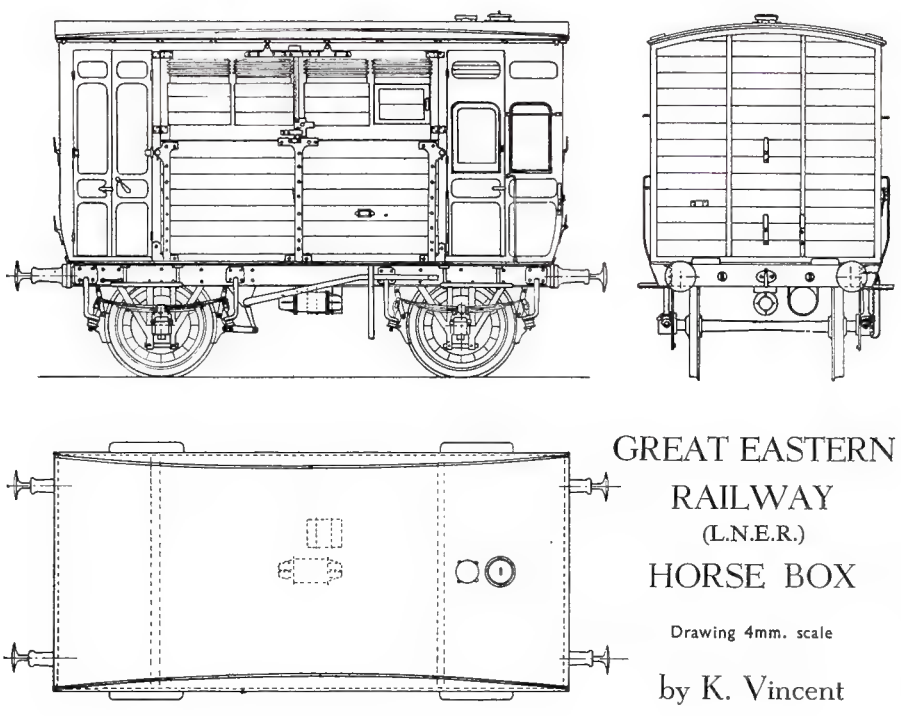
Ever since then it has been surprising how much time I have spent just running trains round and round in circles. Largely this has been a release from the years I have spent with point-to-point lines, and in particular the early days with Tregunna, when it was very much a matter of a fisherman's walk—two steps and overboard. Now I have always considered that a *large* basic continuous run is an excellent foundation on which to build, simply because you can get things running in a reasonable time and add the details later, and my experience in the last couple of months only goes to underline the importance of this. In my own case half the circuit is temporary and will in due course be relaid. There will be another station, for on any single-track continuous run it is advisable, if not essential, to have at least two passing loops if reasonable operation is to be attained—work it out for yourself—while there are two sites for viaducts, which at present are filled with a length of plank covered with softboard. In short, the run consists of a lot of track loosely spiked to softboard, running through a virgin expanse of baseboard. When I feel like some tracklaying, all I have to do is lift and relay—or rather lay new tracks and slew the connections, for I carefully aligned the temporary track clear of the proposed running roads. There really is little reason why one should not lay down such temporary lines —after all, in this particular case the circuit is likely to exist for six months or more in its present condition.

The beauty of a continuous run is that one can keep a made-up train parked on a loop, or even on the main line if the loop is being worked on, and whenever a visitor calls you can show him something working. Indeed, I make a point of running a test train round a couple of times each week to ensure that the line is always in working order, and at the same time eliminate all the tiny irregularities that existed or have crept in due to temperature variations. The test train, incidentally, does not consist of badly running stock, as some people advocate, but perfect stock whose characteristics seek out weak points in the track. The make-up is therefore "Dinah," my Rivarossi 0-4-0, whose short wheelbase indicates, by a dreadful waggle, any short pitching hollows in the track; a rigid underframe truck fitted with a set of fine B.R.M.S.B. "OO" wheels; two long-wheelbase H.D. vans fitted with Peco nylon wheels; and a couple of other vehicles and a brake van. The long-wheelbase vans unerringly find that enemy of good running, cross wind, while the fine wheels pick out irregularities in gauge. I know that these can be discovered with gauges and spirit levels, but frankly, why go to all that effort? Automation, in the form of a train which will pick out the faults unerringly, is much the simplest way of finding out! What of the stock which runs poorly? Simple—it goes straight into shops for overhaul.

In this respect the new arrangement is much easier than the old. For a start, right in front of my nice firm workbench stands Pype. At present Pype is acting as a reception yard for a highly heterogeneous collection of rolling stock which I acquired from time to time over some five years in digs, stored away and forgot. When I came to unpack I was simply amazed at the quantity, and the amount which seemed to have survived the trials and tribulations of the period without significant damage. There remain a couple of outstanding jobs to complete and then comes the grand assault on this collection —but that is another story.

Tregunna has now reached the ideal stage. I have a basic circuit in full operation which can be run at any time I get a visitor. It is indeed a standing rule that no alterations are made to the running roads unless they can be completed in that session, so that this state of affairs can always continue. For the rest, I have plenty of jobs in hand on various sections of the line, jobs which can be carried out when the whim is present. Of course, it would be much tidier to begin a project, complete it, then go on to the next; but, to me at all events, less fun. It is nice to know that no matter what I feel like doing, loco construction, rolling stock, scenic work, wiring, signalling or any of the hundred and one items that go to make up a line—or, for that matter, merely playing trains—I can go ahead and do it. And what is more, the whole thing is nicely designed so that I cannot foresee any end to this highly satisfactory state of affairs for years, after which I shall simply rip up some of the oldest sections and start again! A model railway may be complete, but it must never, never be finished.

* *R.M., May 1957.*



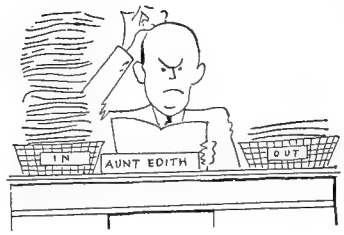
GREAT EASTERN RAILWAY
(L.N.E.R.)
HORSE BOX

Drawing 4mm. scale

by K. Vincent

ADVICE BUREAU

Queries should be addressed to the Peco Technical Advice Bureau, Pecoway, Station Road, Seaton, and should be accompanied by a s.a.e. and coupon on page xiv. We regret that we cannot prepare special designs for individual readers.



After seeing Mr. Taylor's layout in the February issue of the RAILWAY MODELLER, *I have been wondering if it is possible to condense a similar scheme into a space of 11ft.×4ft. Also, would electrification and control prove more difficult using three-rail Peco or Wrenn, and Hornby stock.*

Being a comparative newcomer to the field of model railways, would any of the Peco layout plans assist me with any of the problems attached to converting to this type of layout, or can you advise?

J.G., Weston.

It would be just possible to condense a similar scheme to Mr. Taylor's into a space 11ft. x 4ft. Electrification and control would prove no more difficult in three-rail than in two-rail, although, due to the absence of automatic siding isolation, additional section switches will almost certainly be required.

We do note, however, that you have a rather awkward space in that you have plenty of length and comparatively little width. We are wondering whether you are contemplating a solid baseboard because you believe this to be best, or if it would be possible, either by running around the entire walls of the room or by incorporating a series of portable sections, to form an open layout which could be operated from the inside. Our layout plan-books show both types, but certainly in the larger sizes we do not recommend a solid baseboard, as it is unnecessarily cumbersome and the farther sections of the track are virtually ineccessible. We would suggest that you obtain a set of our plan-books to give you some ideas on the subject.

I am not satisfied with the running performance of my Dublo 2-6-4 tank loco. I find its speed rather excessive and I cannot get it to run at a very low speed. Would it be possible to have new gears fitted to give a lower ratio? Or could it be the resistance in the controller? I am using a Hammant and Morgan Minor. The loco has been converted to two-rail operation.

S.C.F., Newcastle-on-Tyne.

We regret that it is not possible for us to diagnose by post the cause of the excessive speed and the absence of any effective control at low speeds. This should certainly exist, as we have found that it is possible to get excellent slow running with this particular model on any standard controller.

However, a lot depends upon the actual controller you are using. The Hammant and Morgan Minor has appeared in several varieties, but it was not until the emergence of the new graduated resistance that there became available a means of control for motors of widely differing current consumption. The absence of slow running may well be caused by the fact that the range of control is very compressed due to too high a resistance, and therefore it is very difficult for you to set the controller so that slow running is possible.

Alternatively, it may be that some mechanical inefficiency has occurred in the conversion to two-rail operation, and the locomotive is sticking sufficiently to prevent the motor revolving at low speeds when the power is somewhat low, making it necessary to advance the controller to a high speed before the train will start at all.

It will be rather difficult to effect a lower gear ratio, as the worm is cut into the armature shaft, but, as indicated above, control is very effective and therefore we do not consider that this conversion is at all necessary.

What is the smallest radius you recommend for the Tri-ang 0-6-0 tank loco?

A.W., Erith.

The smallest radius employed by Tri-ang "TT" is approximately 10½in., but we have had the "TT" 0-6-0 traversing 9in.-radius curves, and therefore if your objective was to build an absolute minimum layout, restricting your rolling stock possibly just to the 0-6-0 as far as locos go, you could go ahead on this basis. However, apart from this one exception, we would rather recommend that you aim for at least an 18in. radius in "TT."

I would be obliged if you would supply me with answers to the following queries.

1. Is it possible to obtain a "OO" kit of a G.W. diesel railcar?

2. How does one wire up two-rail points in order that only the path along which the point is directed is live?

3. I have some Hammant and Morgan point motors and what are, to my knowledge, passing contact switches (Trix). Can you tell me what contact on the point motor goes to what contact on the switch?

R.M.M., Malvern.

We very much regret to inform you that at present there is no kit for a G.W. diesel railcar on the market, although kits for the B.R. patterns are readily available, and if you desire to make one of these attractive models it will be necessary to build it up from wood or card.

The wiring circuit for a two-rail point was given in the RAILWAY MODELLER for August of last year. Principally, the feeds are taken to the toe end of the point, and the point blades switch the polarity to the frog. No breaks exist in the running rails beyond the point, other than those needed to sub-divide the sections.

The Trix switch in your possession is not suitable for working the Hammant and Morgan point motors, as this is only a single passing contact pattern and not the double passing contact.

I am the possessor of a Hornby-Dublo model railway, which until now has been run on the carpet of a room at my disposal. As you will imagine, this allows no scope for scenic or permanent modelling whatsoever.

I now propose either to purchase trestles, upon which I shall lay a baseboard, or construct bracing and legs myself. As this is a somewhat difficult task, I wonder if you could give me some advice on construction of baseboards, etc., and also wiring, as I intend to convert my track and am completely ignorant on these matters.

J.C.M., Harrogate.

We published an article in November of last year on the construction of a simple portable layout, and this described the elementary framework needed for the baseboards, and showed how to build legs which folded up underneath.

On the question of wiring, unfortunately you do not state whether you wish to go two-rail or remain three-rail, but we would certainly advocate the former, as you will probably find that the saving in cost of the track will outweigh the conversion charges, while you will have a much larger selection of rolling stock to choose from as you develop your line. We can only give advice when it relates to an actual layout, and therefore, when you have finalized your plan, if you would like to submit a fairly large diagram on a separate sheet of paper we will be happy to offer our observations on the subject. Model railway wiring is simple, provided you do not try to take it all in at once. After all, you have been running your Hornby-Dublo layout for some considerable time, and the basic principles remain unchanged even when you mount it on a baseboard and use scale track.

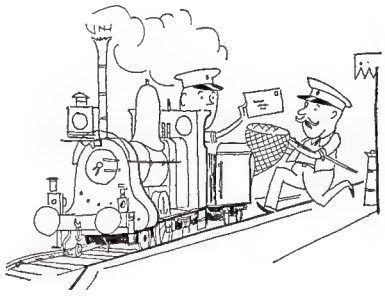
Could you suggest a source of power for a layout with no mains electricity supply?

D.P., Lyndhurst.

Where mains electricity is not available, the best form of power supply for a model railway is a twelve-volt accumulator, a small car starter battery being ideal. The only difficulty is, of course, the necessity of carrying it to the garage from time to time for charging purposes, but apart from this, and the need for mounting the battery in a stout wooden tray to prevent damage to the floor due to acid creep, the supply is ideal, as it gives a smooth twelve-volt D.C. output with plenty of power in reserve.

READERS' LETTERS

A free-for-all forum of ideas and opinion



SOME IDEAS AND SUGGESTIONS

I would like to thank all your readers who answered my inquiry on D.P.D.T. switches. I have now improvised an effective simple reversing switch of this kind, using the plug half of a twin flex plug and socket connector of the standard type as the chief component.

Further experiments on my Orkward Valley layout may be of interest to your readers. In view of the fact that prefabricated track using G.S. rail is enjoying considerable popularity these days, I think that purchasers should be warned of the limited efficiency of this kind of rail. I have used it extensively owing to its low first costs, and for three years it has given every satisfaction. But unavoidable climatic dampness is now causing trouble through rusting, oxidization and bad contacts. There is room for further treatment of G.S. rail to counteract these snags. In cutting down costs I feel sure that the tied-sleeper prefabricated track has a great future in our hobby. I have examined many kinds of track, but for realism and effectiveness coupled with cheap production I have yet to find anything to beat the tied-sleeper punched-chair base of the "Formo" track. It is flexible, it can be laid on any kind of baseboard, and every sleeper is chaired. Given a cheap, non-corrosive, and good conducting rail it would be hard to beat.

Now that the track merchants have faced up to the standards chaos by producing "universal" track, is it not time that the trade should do likewise in offering universal locos, rolling stock and couplings? What a terrific waste there is in our hobby when we are called upon to buy and convert scrap wheels and couplings to meet our needs. Surely all rolling stock should now be fitted with insulated wheels. With the advance in plastics and the use of nylon, there is no excuse for thick flanges for strength. All locos should have provision for any kind of pick-up needed. The Tri-ang type of pick-up lends itself to the provision of adaptors to meet two-rail, three-rail and stud needs. The knuckle coupling of the Peco-Simplex type has come to stay, and is already used by Trix and H.D. The "Gaiety" brake van, in which provision is made for fitting knuckle couplings if desired, is a lead that might be widely taken. The Peco-Simplex coupling could be developed further to one-point anchorage and have more depth to offset track imperfections.

I sometimes wonder whether we are making any rapid strides in our hobby. We know of the disadvantages of rigid axles to prototype rolling stock, but do we fit our models with floating axles and independently revolving wheels? Two-rail gives us realism and we make every effort to disguise the fact that our models are electrically propelled. Yet our trains glide off like electric trains with no suspicion of wheelspin, simply because we load our locos to give maximum adhesion regardless of the class of loco and weight distribution. There is an interesting field in development in balanced ballasting.

We are faced with the difficulty of fitting existing mechanisms in our locos to suit superstructures and avoid driving axles. Have we ever considered the immense potentialities of stub axles for locos?

How often are we invited in making our goods stock and lineside wooden buildings to take a razor blade or cutting tool and laboriously trace out plank joins. Is there not some enterprising firm that can produce a plank join indenter consisting of a cast base and sides, and fitted with a ribbed roller the axle of which can be adjusted for the right pressure of indent? Such a jig would find a ready place on our working bench and hasten up our work by cutting out a lot of unnecessary drudgery.

(REV.) H. PUGHE MORGAN.

Colne, Lancs.

WEST SOMERSET MINERAL RAILWAY—ACKNOWLEDGMENT

The Editor has very kindly given me this opportunity of expressing my thanks to all who have written, either to me personally or to this magazine, about the West Somerset Mineral Railway. The response was most encouraging and I wish to thank everyone concerned for their help.

R. S. MOORE.

Exeter, Devon.

SOME LATE VICTORIAN ODDITIES

As promised, I have included these two pictures from 1897 when Albert Chevalier was packing the music halls, errand boys were whistling "Knocked 'em in the Old Kent Road" and moustache cups were to be found in every kitchen cupboard. The wagons are a pair which once belonged to the Birmingham Corporation Water Department's railway from Noyadd siding, Elan Junction, on the Cambrian; No. 11, which appears in both, being the one which has been mentioned in correspondence about its appearance later on the West Somerset Mineral Railway.

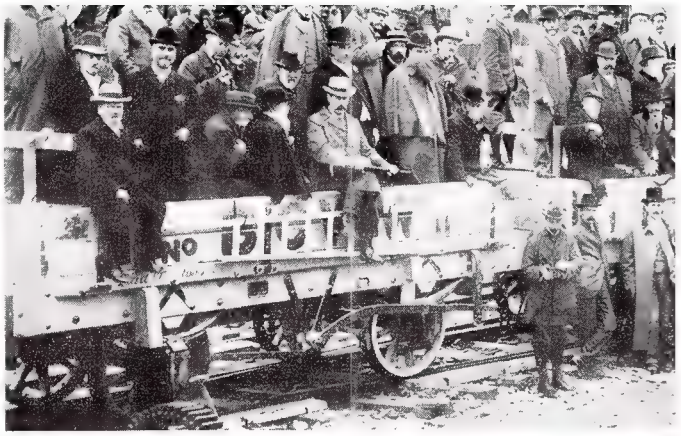
The occasion portrayed was the laying of the commemorative stone which is now in the wall just across the Garig Ddu viaduct, which is seen here as a row of arches with the railway on top. The present roads are largely on old track beds. Beyond the viaduct-cum-dam, which is normally completely submerged, is the point from which the aqueduct to Birmingham starts, the lower reservoir being used to regulate the volume of water released to the river.

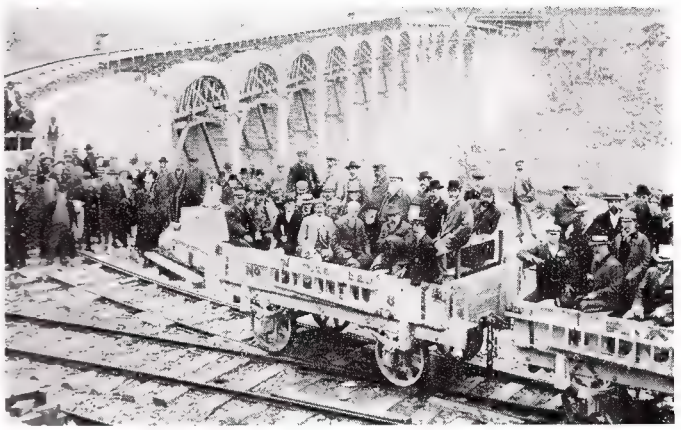
The men themselves, engineers, clerks, foremen, gangers and local worthies, all seem to be represented in and around the wagons and the chairman of the water committee stands holding the mall surrounded by officials and committee. One can see how styles long outmoded in London persisted in those days in country places, and there is every type of headgear, from the country gaffer's hat of the 1850s or even earlier through toppers, boaters and bowlers up to the homburg, which was later to typify the Edwardian period, and—dare I say it?—"whiskers galore"! Even the full-length coat of the "villainous squire" pattern is there and one gentleman is the owner of the latest thing in amateur photography, "the instantaneous snapshot camera"—the lawsuit over the Eastman Kodak patent being then only three years past.

The track, which is typical of the whole system, will have the interest of curiosity for those who have been brought up on modern chaired bullhead mingled with B.R.'s latest in heavy flat-bottomed rail. Shaped timber baulks were used in most places on this temporary railway as backings to check and wing rails, and on tight curves such as this spiked to pairs of sleepers to keep the track in gauge—the track being a light Vignolles section spragged directly to the sleepers without sole plates. Note too the continuous inner checkrail on the curve across the viaduct, and even one or two logs (presumably flat underneath) used as sleepers.

There appear to have been at least three slightly varying types of dropside wagon owned by Birmingham at the time, and oddly enough No. 11 is the only one on which an original owner's plate is partly decipherable. The central initial letter is unfortunately not clear and a search in records has eliminated G.W.R. from the possibilities. Has anyone any suggestions as to which company had a D or other letter as a prefix to its wagon numbers?

A tremendous number of wagons like these were owned by both railway companies and by private contractors, and many of them had their ends raised in a curve to increase their capacity for loose





material. Some even had spring buffers at one end only—probably an economical recognition of the policy of the Railway Clearing House which aimed at clearing British railways of dumb-buffered stock by 1900, though in fact they remained in use in places till as late as 1910 and we know of at least one derelict which has been measured and drawn recently.

Should anyone fancy making a model of one of these I append a set of dimensions which will give a reasonably proportioned result—but please accept them as being merely deductions from these photographs assisted by observations from other sources.

Length over body 16ft.; length over solebars 18ft. 6in. or 19ft.; wheelbase 9ft.

Width over solebars 6ft. 8in., solebars being of 12ft. x 9in. timber.

Floor thickness on top of solebars 3in., dropsides being of two 9in. planks.

The body and undergear were yellow, including the wheels and body strapping. The ironwork was picked out in black and some wagons had their solebar ironwork and bolt-heads picked out in black also. Lettering was black and shaded probably in red.

They could be used as gang wagons with seats dropped in and climbing ladders hung on the sides with S hooks as we see them here, and I have pictures showing them sheeted down as load carriers. They were brought into use as passenger vehicles on several ceremonial occasions, and it seems that one of them once even carried a mobile brass band.

Quite a mixed bag of other railway companies' and private-owner wagons found their way up the Elan valley at times, notably Cambrian, G.W. and L. & N.W. opens, some twin bolsters and a gunpowder van or two—and, of course, dozens of stubby little works tippers.

I have been permitted to copy and reproduce these pictures by courtesy of Mr. A. E. Fordham, general manager and secretary, City of Birmingham Water Department.

RICK GREEN.

CONTACTS WANTED

Mr. E. T. Day, of 30 Glenmore Avenue, Stoke, Plymouth, would like to contact other enthusiasts living in the Plymouth area who are interested in forming a model railway club.

BOOK REVIEWS

THE MODERN ARCHITECTURAL MODEL, by T. W. Hendrick (Architectural Press, 16/-).

Architectural modelling is merely another term for a common process in railway modelling, building construction, and this book is therefore as useful to us as it is to those for whom it was principally written. More than that, because the architectural model proper has evolved on slightly different lines, certain techniques have been developed which are foreign to model railway practice, but which offer attractive possibilities when applied to our branch of the craft.

As the work is intended primarily for professional modelmakers certain items of equipment (particularly a 12ft. x 9ft. workshop!) appear rather lavish, but Mr. Hendrick has not wholly forgotten the problems of the architectural student, whose equipment is about as restricted as that of the average modeller.

The book covers not only the actual building construction but also landscape modelling. It is therefore a complete guide to the entire field of scenic modelling and is thoroughly recommended.

"TRAINS ILLUSTRATED" SUMMER ANNUAL (Ian Allan, 4/6).

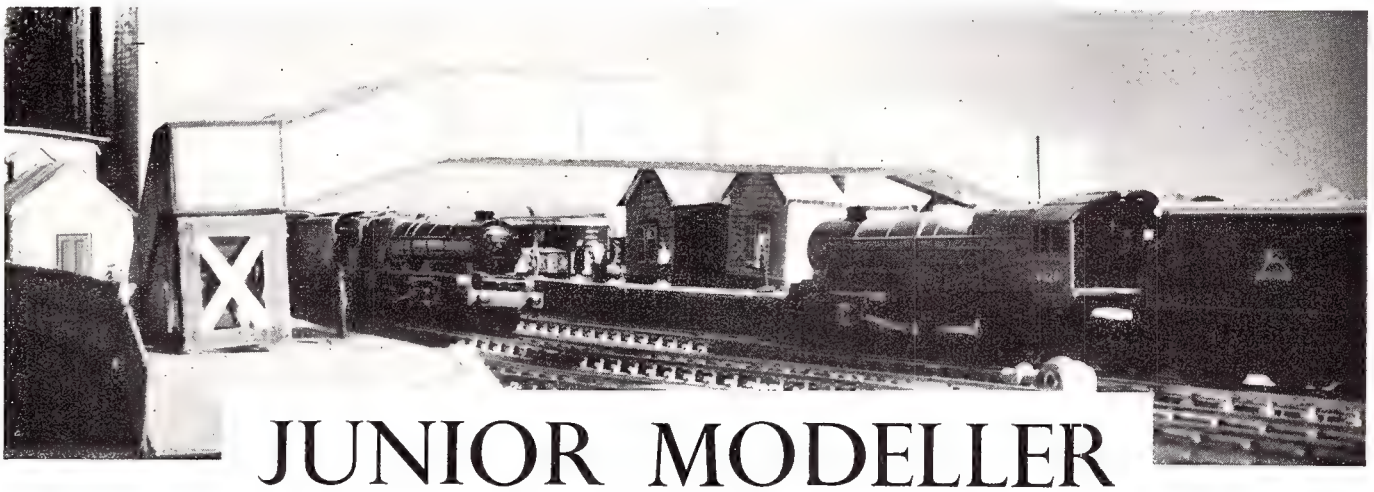
Trains Illustrated and *Trains Annual* need no introduction to the British enthusiast, and we feel sure that the bright cover of this newcomer from the same stable will prove equally popular. It is intended primarily as light summer reading, in that the more technical articles have been omitted and the general trend of features and photographs is towards recognized holiday areas. Nevertheless, this does not mean that it is an evanescent publication; it is in fact well worth retaining on the enthusiast's bookshelf for future reference.

THE DIESEL LOCOMOTIVE, by R. L. Aston (Thames & Hudson, 12/6).

This is a technical work designed to give railwaymen and students an insight into the technicalities of diesel-mechanical and diesel-electric locomotives. It therefore deals exclusively with the interior economy, rather than externals, but will be of considerable value to those who wish to know "how it goes," for the intricacies are explained as simply as possible while retaining accuracy.

THE RAILWAYMEN'S YEARBOOK 1957 (Railway Publication, 5/-).

This edition of a well-established annual publication is the first under its new proprietors, and includes additional material broadening its scope to make it more attractive to the enthusiast. It represents excellent value for 5/-, and contains a mine of useful data and articles.



JUNIOR MODELLER

POINT-TO-POINT LAYOUTS

ALTHOUGH everyone starts with a continuous run, there is no doubt that sooner or later the desire to introduce point-to-point working, with its greater realism of operation, leads to a revision or modification of the basic oval. This does, however, introduce several factors which must be understood if satisfaction is to be obtained.

The first is the need for running round the train, for except when a multiple unit or push-pull train is being used the locomotive must be able to get from the front to the back of the train, unless a spare engine is available to haul the train away while the original train engine is held trapped. The second is that every point-to-point layout needs two termini or one terminus and a reversing loop, for what goes out must come back ! These conditions do undoubtedly call for a fair amount of pointwork, and this is perhaps the reason why point-to-point working is less popular among the younger enthusiasts, whose resources in this respect are sadly limited.

If the line is a long point-to-point—for example, the two termini are well separated in distance—the stations should for convenience possess roughly equal facilities in that each should be capable of handling equal length trains. There is no point in making one station large enough to tackle six-coach trains if the other cannot take more than two—better by far settle for four at each end !

Turntables, if they exist, should appear at each end if the expresses are not to make two light-engine movements from one end of the line to the other ; so if only one is possessed it should form a loco depot halfway along the line. The light-engine mileage is not reduced in this way, but it does not seem quite so unrealistic ; indeed, most locomotives do travel some distance from the termini to their depot.

These conditions do, however, suppose a reasonably lavish provision of track and points—particularly the latter. What then can the less endowed enthusiast do to get point-to-point running ? He must, of course, retain the oval, and lay down a reasonable proportion of his sidings in each direction. He must resign himself to the necessity of handling no more than one train at once, though if, as is frequently the case at this stage, he has but one locomotive this is inevitable. Last, but by no means least, he must overlook some very unprototypical practice, for he can only run round his train by a manœuvre which has no counterpart in real life—he must run light engine round the oval !

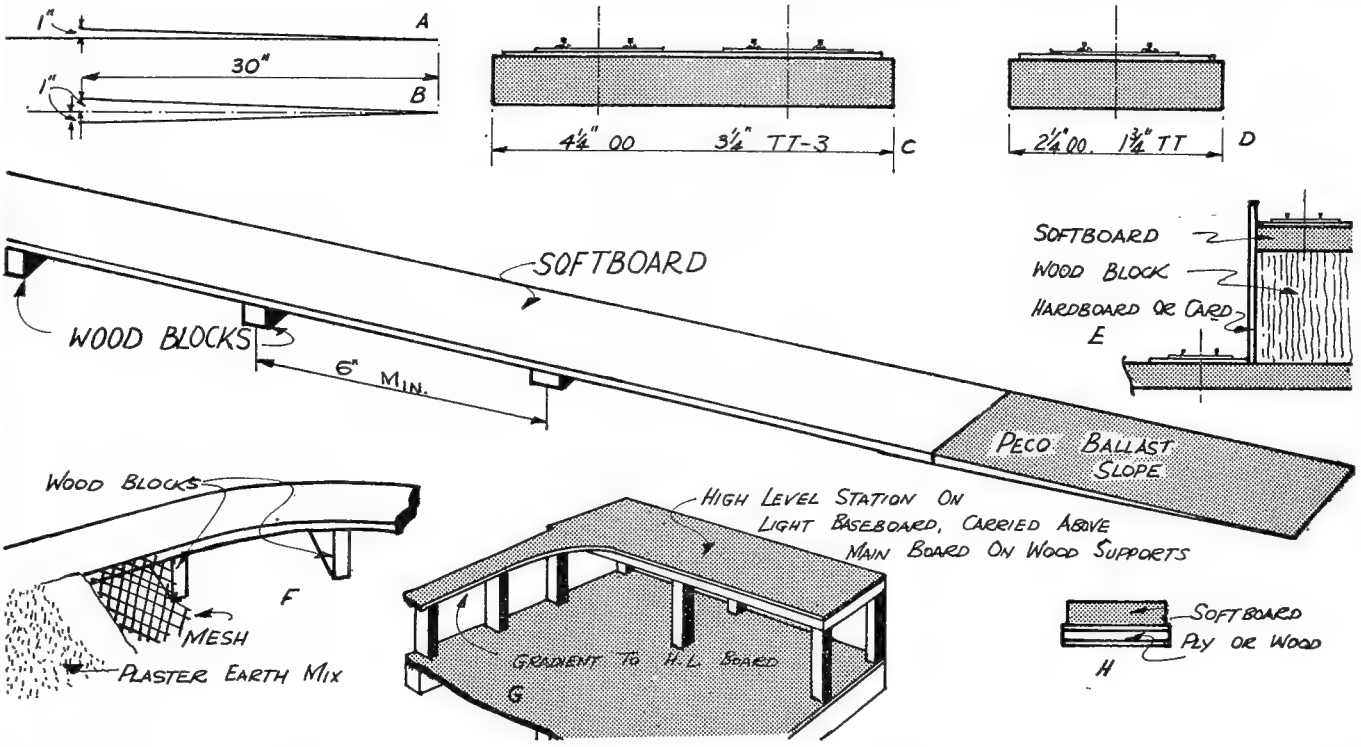
Working a restricted line, with perhaps but four points and only one locomotive, does call for some imagination, but even so quite a lot of pure enjoyment can be attained. Moreover, we learn from a simple layout such as this the essential parts of a track plan. Indeed, it is often illuminating to see how much one can do without and still get good operation. Why not try it ?

We give on this page two views of the extensive Tri-ang system owned and operated by Mr. H. A. Stone. Note particularly the effective use of multiple levels to add scenic interest, and the employment of Bilteezi and other buildings, which are not laid down in straight, formal lines, but scattered realistically along the roadsides.

(Photo by R. D. Doyle.)

JUNIOR DO-IT-YOURSELF

GRADIENTS



THERE is no doubt that the addition of some gradients to a layout materially adds to the scenic and operating effect, but this does pose two problems: what gradient to use and how to make it.

The first problem is one without a single solution, unless "as easy as possible" can be called an answer. Much depends on whether the gradient is on the straight or a curve, for where the curve is at all sharp this already exerts considerable restraint on the train. Again, the length of train to be hauled has a considerable bearing, while the actual length of grade and its location in the layout are of even greater importance. This can best be explained by pointing out that where the grade is relatively short and can be "rushed" at top speed it can be appreciably stiffer than when it extends for several feet and is met at the end of a terminal road!

It is possible to group graded lines into three general classifications. The first is steep sections of limited use, for example grades up to coal or mineral tips, where the load might be only one truck, and small branches, where the trains will be naturally shorter. The second classification is restricted main line, where reasonable length trains of, say, four bogies are envisaged—that is to say the average layout. The final classification is the high-grade main line, where long trains are to be used, but as this type of layout calls for extensive space anyway (because of the long trains) there is no difficulty in arranging the easy climbs.

Gradients are measured by saying how many units of length are needed for one unit rise, thus a 1 in 30 gradient climbs one inch in thirty along the baseboard (A). A steep grade is anything from 1 in 29 to 1 in 30 (less than 1 in 20 is not recommended), for general purpose lines 1 in 30 to 1 in 60, and above 1 in 60 for a high-grade line.

The main purpose of a gradient is to enable one line to pass over another, and therefore in "OO" a climb of 3in, is needed—this allows for a reasonable, though not excessive, thickness of baseboard (for "TT-3" 2½in. is needed). On a 1 in 30 this calls for 7ft. 6in., provided only one line rises, but if, as shown in B, one line falls while the other rises, the distance can be halved. However, this is possible only when the baseboard has been designed with this in mind, which is rarely the case, and even so the constructional complications are considerable.

The construction of a gradient begins with the preparation of a sub-base, which is cut to the form of the proposed line from ½in. insulation board. The widths of the sub-bases should not be less than those given at C for double track and D for single track, but can be wider if so desired. As forming a feather edge from pulpboard is anything but simple, the beginning of the grade is formed with a Peco Ballast Slope, only the very edge of the softboard being tapered down to ⅜in. thick with a sharp knife.

The completed sub-base is then laid down over the baseboard and pinned down to the lower end. The upper end is then raised to the desired height with a shaped piece of wood and secured lightly. Now all that needs to be done is to put a series of graduated wood blocks along the grade at not more than 6in. intervals. These supports are juggled about until the grade is adjudged of even slope throughout.

Where the high and low level tracks are very close, a retaining wall is obligatory. This is remarkably easy to construct—a sheet of stout card or hardboard is mounted vertically or at a very slight angle as shown in E. To get the correct slope at the top, mount the "wall" temporarily and draw a line by placing a stub of pencil on a flat wagon and running it up the grade, with or without tracks. To finish, apply a card capping and either paint or cover the wall in brick paper.

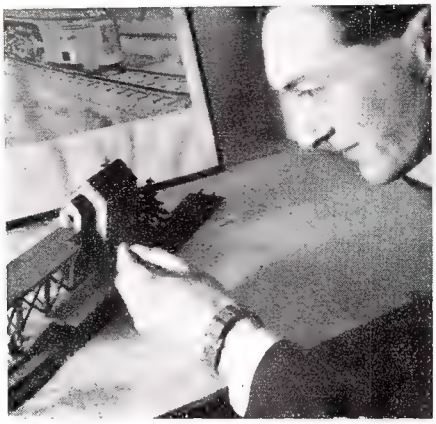
Where more room is available an embankment as shown in F is advisable. The standard construction—plaster over wire mesh—is followed here.

Usually a gradient is employed to reach a high-level terminus, as shown in G. This is carried on a light baseboard mounted on short legs resting over the main frames of the lower main baseboard. To save height the framing of the upper baseboard can be made from ½in. thick timber, which is strong enough if closely supported; but where even this would be too thick the "sandwich" baseboard can be employed. Here the ½in. insulation board is supported on hardboard ply or timber, depending on the circumstances, as shown in H. This form of construction is particularly useful where a relatively narrow linking section between baseboards is required.

Personality Parade No. 68

Adrian Le Mottee

Nottingham M.R.C.
N.M.R.A., British Region

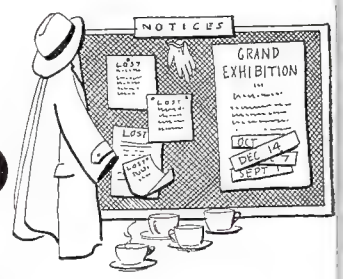


LIVING in Jersey from an early age, Adrian Le Mottee started in the hobby shortly afterwards with clockwork Bing "OO" models provided by a fond aunt. These finally suffered rather through having elaborate and highly realistic layouts laid out on a nearby beach, and the one-time owner now has hysterics every time he thinks of it. Years of greater discretion brought the almost inevitable Hornby "O" gauge systems, these being replaced in turn on the introduction of Dublo, for which system he still has great admiration.

German occupation of Jersey caused, among other things, the complete cessation of electrical services and brought a return to "O" gauge clockwork, Hornby again, with scale models being added after the war. Joining the British region of N.M.R.A. in 1946, he turned gradually to "HO" American modelling, bringing a fair collection with him to Nottingham in 1949. His marriage coincided with, and remarkably survived, his appointment as British region secretary to N.M.R.A., a post which he held for two and a half years until the need to earn a living demanded more time than the region was prepared to allow.

Joining the Nottingham M.R.C. with the firm intention of remaining "one of the boys," he found himself backed into the chair last September without any ready excuses. An unrepentant model-basher, he is at present desperately trying to bring his heretical West Rutland Light Railway to a reasonable state of completion. Retaining his membership of both groups and his interest in the two fields of railway modelling, in addition to the more normal interests of home, family, cameras and motor-scooters, leaves just enough time in which to scrape a living running a high-class men's wear business and as a free-lance journalist.

CLUB NOTICE BOARD



NOTES AND NEWS

Merseyside Model Railway Society

The society has now taken over larger premises at 102 Chester Street, Birkenhead, and these clubrooms are open every Friday night from 7.30. The 16.5mm. and "EM" layouts are in running order and a "TT3" layout is under construction.

The winter monthly talks begin at the Grenville Cafe, Tithebarn Street, Liverpool, on September 18.

The Merseyside society is the only model railway society in Liverpool which caters for all gauges. If you reside in the Wirral or Liverpool, you are cordially invited along to either of our addresses, where you will be assured of a very entertaining evening. Why not put yourself on the "right lines" by going along to see for yourself the Merseyside Model Railway Society?

All inquiries should be addressed to the secretary, Mr. A. L. Eagles, 38 Silverdale Road, Bebington.

Epsom and Ewell Model Railway Club

This club meets on the second Thursday in each month at Pit House, Ewell, Surrey, and is always ready to welcome visitors. It caters mainly for "OO," "O" and "S" gauges. The annual subscription is 10/-. Hon. secretary, Mr. L. C. Krailing, 74 Weston Park, Weston Green, Thames Ditton, Surrey.

The Model Railway Club

Members whose facilities for running or testing their locomotives and rolling stock at home are limited, or even non-existent, find the club's test tracks a great boon, and consequently track nights are eagerly awaited fixtures. Visitors and prospective members are welcome to take their turn in using these tracks, and for those who may wonder what they are like a short description follows. "O" gauge: a large oval of fine-scale, double-line track. One track caters for centre third or outside third current collection, while the other track can accommodate stud-contact or two-rail locomotives. As there are no points in the oval, both fine-scale and coarse-scale rolling stock can be run. "OO" gauge: a triple oval of tracks which fits inside the "O" gauge oval. Two tracks are laid to a gauge of 16.5 mm. with a range of current collection similar to the "O" gauge and the third track is laid to a gauge of 18mm. with two-rail or stud-contact collection. Each track has its own controller, with an automatic cut-out in the event of a short circuit, and a current output which can be varied from 6 volts to 32 volts D.C.

Apart from electrically propelled locomotives, the "O" gauge tracks are also used on occasions by live steam, compressed air and clockwork engines.

The club has only one fixture during this month—a track night, sponsored by all groups, on Thursday, August 22. Track nights are held in the clubroom at Hammersmith (Piccadilly Line) station and the premises are open from 6.45 till 10 p.m. The entrance to the clubroom is the first door on the right after passing between the two booking offices. Visitors are always welcome.

Further particulars can be had from the hon. secretary, Mr. D. A. Boreham, 10b Ealing Road, Northolt, Middlesex.

Orpington and District Model Railway Club

The club will be holding an exhibition at Bromley Public Library, High Street, Bromley, Kent, on September 21, 1957, from 10 a.m. to 8 p.m. For further details apply to the hon. secretary, Mr. R. Clark, 163 Poverest Road, Orpington, Kent.

South-East Essex Railway Society

This society moved into temporary headquarters last September at 9 Elmer Place, Southend-on-Sea. Part of the room has been sectioned off as a clubroom, where regular lectures are held on the second Friday of each month. At the moment members are working on a "OO" gauge stud-contact portable system.

The society will be holding its own first exhibition at St. John's Hall, Southend (behind the Palace Hotel), from August 7 to 10 inclusive. There will be at least four working layouts, stands from six visiting clubs and displays of photographs by leading photographers, as well as exhibits from British Railways E.R. and S.R. and the B.T.C.

The hon. secretary is Mr. P. I. Paton, "Syon Reach," Rayleigh Drive, Leigh-on-Sea, Essex.

Dronfield and District Model Railway Society

The society has now completed construction of its baseboards, and track to the gauge of 16.5 mm. is under course of construction. New and old members welcome; club nights Thursday each week. Club premises, Chesterfield Road, Dronfield (rear gas showrooms). Secretary, Mr. M. Oxley, 188 Stubley Lane, Dronfield Woodhouse, near Sheffield.

Thames Valley Model Railway Club

The hon. secretary of the above club is Mr. B. Glanfield, 59 Laleham Road, Shepperton, to whom all correspondence should now be addressed. New members are always welcome and should contact the hon. secretary. The future programme includes many visits of considerable interest and will be given in advance in these columns.

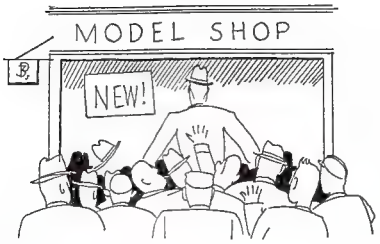
AUGUST MEETINGS

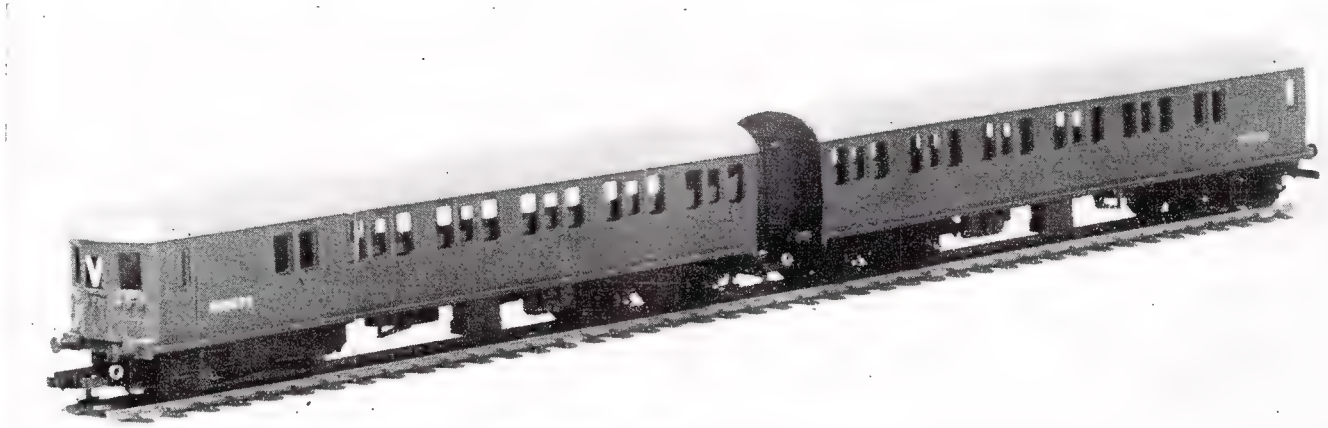
Model Railway Club
22—Track night (Hammersmith).

Bolton Model Railway Circle
7—At 21 Tavistock Road, Bolton.

Dronfield and District Model Railway Society
1—Club layout construction.
8—Talk, "Block signalling."
15—Club layout construction.
22—"Any Questions?"
29—Club layout construction.

TRADE WINDOW





TRI-ANG " OO " S.R. ELECTRIC SET

ROVEX SCALE MODELS
Margate, Kent.

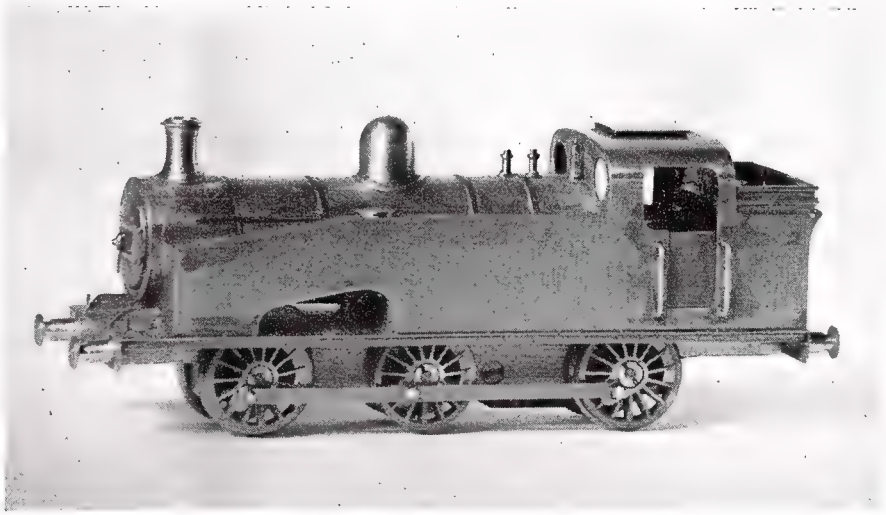
Motor coach 49/6.
Dummy motor coach 9/11.

No longer need Southern fans complain of neglect now that this excellent economical set is available. As we foreshadowed last month, the motor bogie is mechanically the same as that fitted to the BoBo diesels, but has a correct pattern electric bogie side complete with prototype collector bars, though the pick-up is actually two-rail.

It goes without saying that performance is superb. The set matches the standard Tri-ang suburban stock and compo coaches are now available in green to enable the modeller to have any length train. Two-, three- or four-coach rakes are correct prototype practice, but by the addition of further dummy motor coaches trains of up to eight coaches can be handled, though with the full eight we did notice a little slip on a 1 in 20 grade, easily cured by the addition of ballast. However, it would be better to use two motor coaches on a train of this nature, as almost certainly one would wish to split the sets into a pair of three- or four-coach units.

As can be seen from our illustration, the indicator window displays a " V," which is illuminated. This is a loose translucent plastic plate and can be removed and replaced by any other home-made indication simply by unscrewing the roof. Underframe detail is simple but effective, and while the coach is not an exact replica of any specific B.R. stock the essential character is caught.

The dummy motor coach is a slightly modified motor coach moulding, but does not include lighting and is fitted with a standard coach bogie, though we understand that the provision of a dummy motor bogie is being considered. As the light housing is present, it would be reasonably easy to fit a spare bulb in the end, for the prototype is always illuminated whether driving or trailing. At the same time the modeller could close up the gap between the coaches by fitting semi-permanent couplings, for this gap, necessary because of the exigencies of the Tri-ang train sets, is the main divergence from scale accuracy. It is, however, so easily overcome that we confidently predict a sudden boom in electric outline traction on many model railways. Might we suggest the addition of a dummy third rail?



TRAIN RECORDINGS

TRANSACORD LTD.

Although recordings of trains in motion are never likely to become " pop " discs in the " Top Twenty," there is no doubt that the railway enthusiast will find them of greater lasting interest than many records which have sold in their thousands. Moreover, as time goes on, and the familiar lovely sounds of the steam age become but memories, it will be pleasant to sit by the record player listening to A4s or Dukedogs hard at work on Transacord's superb recordings.

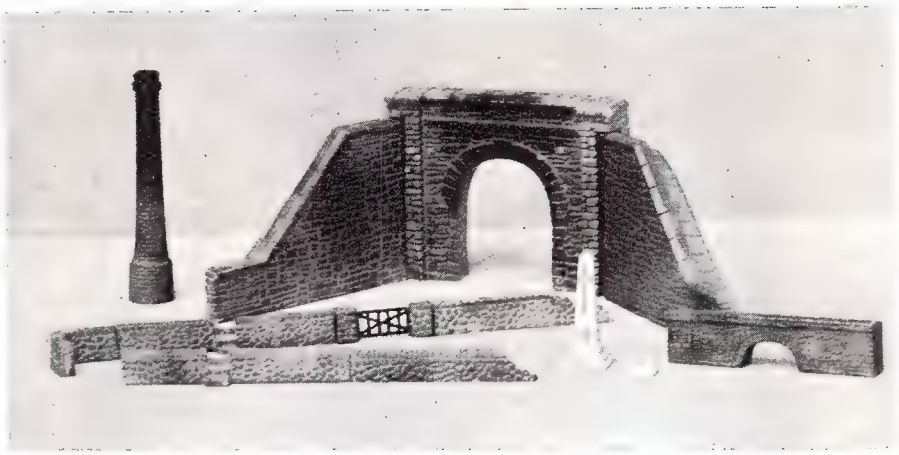
These records are faithful copies of selected tape recordings made on various stretches of British railways, and their fidelity is such that when one of our staff tried them at home in his flat the neighbours began to wonder how he had smuggled the trains in ! Certain of the earlier recordings are available on 78 r.p.m. discs, but all new releases will be made on 33⅓ long-playing sides only. The prices are virtually in line with present-day standards, a considerable achievement for a specialist item and only possible because the people concerned are enthusiasts and have regarded this more as a labour of love than anything else. The recordings, which are accompanied by a detailed description, giving the provenance of the various bands, are obtainable only from the manufacturers and can be recommended to all lovers of the steam locomotive.

J.50, " TT-3 " GAUGE

WALKER AND HOLTZAPFFEL
23 Paddington Street, London, W.1.

£11/8/6 unpainted.

As many readers are aware, Walker and Holtzapffel have a large number of excellent hand-built models available at quite reasonable prices, built to accurate standards of finish. This range has now been extended to " TT-3," and we illustrate above a typical example from the range. The model is shown unpainted, but the manufacturers will carry this out to the purchaser's requirements for an additional charge, depending on the livery selected—obviously a full lining and lettering in L.N.E.R. style will be dearer than a plain B.R. black with transfer crest. The model is very nicely made from nickel silver with turned brass fittings, and has a brass built-up underframe, secured with screws and fitted with a " Terrier " motor. The construction, design and workmanship throughout are of high standard, and the price, bearing this in mind, is extremely reasonable.



"OO" TUNNEL MOUTHS, WALLS, ETC.

SCENIC MODEL PRODUCTIONS

Pwllhelli, Caernarvonshire.

Our illustration shows a selection of nicely produced plaster scenic accessories made by a new name in our field, Scenic Model Productions. The range has several attractive innovations. We would in particular mention the retaining walls, which can be set at any angle to the tunnel mouth, and the walling, which is available in two patterns, round and square topped, with partially broken-down ends and stiles provided to break up the picture. The monument and graves are especially worthy of note—model churchyards are unwontedly empty, and these provide the answer. We can thoroughly recommend these items, which are produced in a hard plaster and available coloured or plain.

NEW STATION LAMPS

TYLDESLEY AND HOLBROOK

Deansgate, Manchester.

Tyldesley and Holbrook have produced a pair of attractive dummy electric light standards primarily for "TT," the smaller swanneck pattern being 45mm. high and the larger straight pattern 64mm. These sizes are correct for a "TT-3" street lamp, but equally correct for a 4mm. scale station lamp. Once again it is a case of large for "TT-3" and small for "OO." At 6d. each they are excellent value.

NEW JAMIESON LOCO KIT

As we go to press we have received a sample of the new Jamieson kit for an ex-L.N.E.R. K1 2-6-0. This is fully up to the manufacturer's high standards of quality and is now being assembled by our technical staff. A detailed review will be given next month.

PAGING MR. HATCH!

Messrs. Hammant and Morgan wish to deliver Mr. Hatch's cut-out ordered last April, but as his address was given only as Danebury, Marley Avenue, Hants, the G.P.O. have returned the parcel. Could he please let them know the name of his town so that they can complete the order?

THE POWERMASTER

Readers have doubtless been intrigued by references to the Powermaster in Hammant and Morgan's advertisements in the past few months. We have received the first of these revolutionary units and it is now being thoroughly tested. Full details will appear next month in a special review.

THE SEPTEMBER "RAILWAY MODELLER" WILL BE PUBLISHED ON

AUGUST 26

This issue has now gone to press. Copy for October must be received by September 24.

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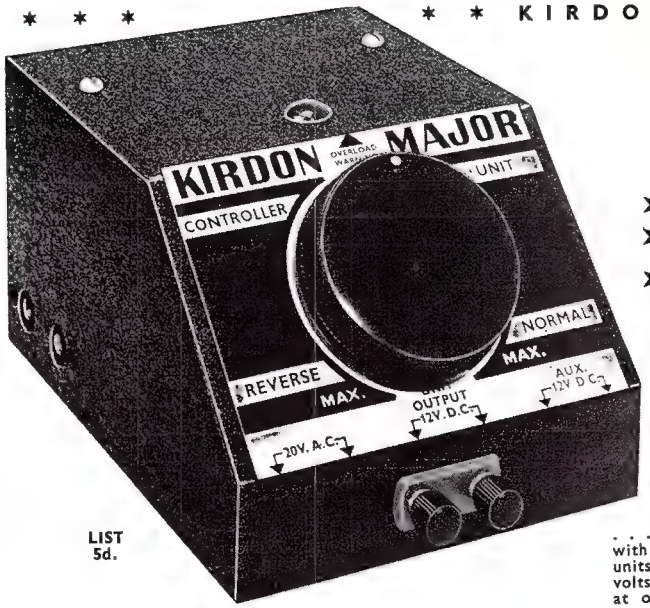

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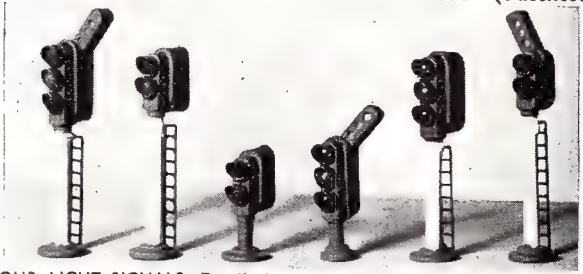

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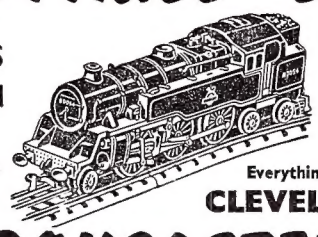

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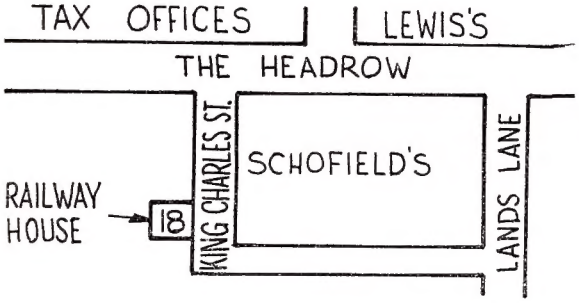

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133 THE BROADWAY
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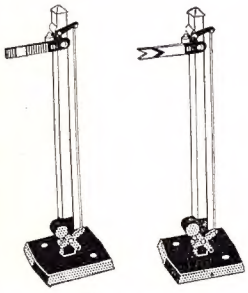

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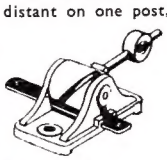

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(Tri-ang conversions with H/D twin centre rail collectors and couplings.)
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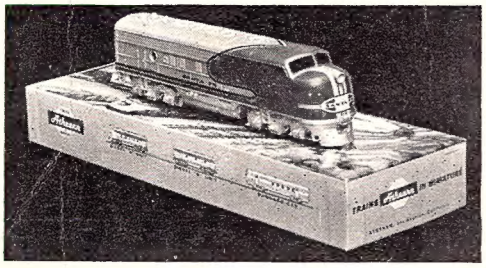

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Completely assembled and painted coach		22/11
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WATER WAGON WITH TWO HORSES **4/9**

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